

=> fil reg
 FILE 'REGISTRY' ENTERED AT 14:07:35 ON 25 JUN 2008
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 provided by InfoChem.

STRUCTURE FILE UPDATES: 24 JUN 2008 HIGHEST RN 1030471-05-6
 DICTIONARY FILE UPDATES: 24 JUN 2008 HIGHEST RN 1030471-05-6

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH January 9, 2008.

Please note that search-term pricing does apply when
 conducting SmartSELECT searches.

REGISTRY includes numerically searchable data for experimental and
 predicted properties as well as tags indicating availability of
 experimental property data in the original document. For information
 on property searching in REGISTRY, refer to:

<http://www.cas.org/support/stngen/stndoc/properties.html>

=> d ide can l8

L8 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 675819-34-8 REGISTRY
 ED Entered STN: 16 Apr 2004
 CN Barium calcium strontium silicate ((Ba,Ca,Sr)2(SiO4)) (CA INDEX NAME)
 OTHER NAMES:
 CN Barium calcium strontium silicate (Ba0-2Ca0-2Sr0-2SiO4)
 DR 864429-54-9
 MF Ba . Ca . O4 Si . Sr
 AF Ba0-2 Ca0-2 O4 Si Sr0-2
 CI TIS
 SR CA
 LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component	Ratio	Component Registry Number
O4Si	1	17181-37-2
Ca	0 - 2	7440-70-2
Ba	0 - 2	7440-39-3
Sr	0 - 2	7440-24-6

32 REFERENCES IN FILE CA (1907 TO DATE)
 33 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 148:572104
 REFERENCE 2: 148:572103
 REFERENCE 3: 148:572102
 REFERENCE 4: 148:272462

REFERENCE 5: 148:108828
 REFERENCE 6: 148:108792
 REFERENCE 7: 147:223014
 REFERENCE 8: 147:199765
 REFERENCE 9: 146:239033
 REFERENCE 10: 146:216028

=> d ide can 11

L1 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 675819-87-1 REGISTRY
 ED Entered STN: 16 Apr 2004
 CN Aluminum gadolinium gallium indium lanthanum lutetium praseodymium
 samarium terbium yttrium oxide (Al4.9-5.1Gd2.8-3Ga4.9-5.1In4.9-5.1La2.8-
 3Lu2.8-3Pr2.8-3Sm2.8-3Tb2.8-3Y2.8-3O12) (CA INDEX NAME)
 MF Al . Ga . Gd . In . La . Lu . O . Pr . Sm . Tb . Y
 AF Al4.9-5.1 Ga4.9-5.1 Gd2.8-3 In4.9-5.1 La2.8-3 Lu2.8-3 O12 Pr2.8-3 Sm2.8-3
 Tb2.8-3 Y2.8-3
 CI TIS
 SR CA
 LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component	Ratio	Component Registry Number
O	12	17778-80-2
In	4.9 - 5.1	7440-74-6
Y	2.8 - 3	7440-65-5
Ga	4.9 - 5.1	7440-55-3
Gd	2.8 - 3	7440-54-2
Tb	2.8 - 3	7440-27-9
Sm	2.8 - 3	7440-19-9
Pr	2.8 - 3	7440-10-0
Lu	2.8 - 3	7439-94-3
La	2.8 - 3	7439-91-0
Al	4.9 - 5.1	7429-90-5

1 REFERENCES IN FILE CA (1907 TO DATE)
 1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 140:294463

=> d ide can 19

L9 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 864429-56-1 REGISTRY
 ED Entered STN: 04 Oct 2005
 CN Barium calcium magnesium strontium zinc metaphosphate oxide
 ((Ba,Ca,Mg,Sr,Zn)2(PO3)2O) (CA INDEX NAME)
 MF Ba . Ca . Mg . O3 P . O . Sr . Zn
 AF Ba0-2 Ca0-2 Mg0-2 O7 P2 Sr0-2 Zn0-2
 CI TIS

SR CA
LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component	Ratio	Component Registry Number
O	1	17778-80-2
O3P	2	15389-19-2
Ca	0 - 2	7440-70-2
Zn	0 - 2	7440-66-6
Ba	0 - 2	7440-39-3
Sr	0 - 2	7440-24-6
Mg	0 - 2	7439-95-4

14 REFERENCES IN FILE CA (1907 TO DATE)
14 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 148:178888

REFERENCE 2: 146:510061

REFERENCE 3: 146:510060

REFERENCE 4: 145:429111

REFERENCE 5: 145:365960

REFERENCE 6: 145:302328

REFERENCE 7: 145:237981

REFERENCE 8: 145:198437

REFERENCE 9: 144:360005

REFERENCE 10: 144:263269

=> d ide can l10

L10 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
RN 675819-79-1 REGISTRY
ED Entered STN: 16 Apr 2004
CN Barium calcium magnesium strontium bromide chloride fluoride hydroxide
phosphate ((Ba,Ca,Mg,Sr)5[Br,Cl,F,(OH)](PO4)3) (9CI) (CA INDEX NAME)
MF Ba . Br . Ca . Cl . F . H O . Mg . O4 P . Sr
AF Ba0-5 Br0-1 Ca0-5 Cl0-1 F0-1 H0-1 Mg0-5 O12-13 P3 Sr0-5
CI TIS
SR CA
LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component	Ratio	Component Registry Number
Cl	0 - 1	22537-15-1
F	0 - 1	14762-94-8
HO	0 - 1	14280-30-9
O4P	3	14265-44-2
Br	0 - 1	10097-32-2
Ca	0 - 5	7440-70-2

Ba		0 - 5		7440-39-3
Sr		0 - 5		7440-24-6
Mg		0 - 5		7439-95-4

3 REFERENCES IN FILE CA (1907 TO DATE)
3 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 144:360005

REFERENCE 2: 143:295248

REFERENCE 3: 140:294463

=> d ide can l11

L11 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 473908-57-5 REGISTRY
 ED Entered STN: 19 Nov 2002
 CN Aluminum barium calcium magnesium strontium oxide (Al10(Ba,Ca,Sr)MgO17)
 (CA INDEX NAME)
 MF Al . Ba . Ca . Mg . O . Sr
 AF Al10 Ba0-1 Ca0-1 Mg O17 Sr0-1
 CI TIS
 SR CA
 LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component	Ratio	Component Registry Number
O	17	17778-80-2
Ca	0 - 1	7440-70-2
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Mg	1	7439-95-4
Al	10	7429-90-5

26 REFERENCES IN FILE CA (1907 TO DATE)
26 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 147:82263

REFERENCE 2: 146:510061

REFERENCE 3: 146:510060

REFERENCE 4: 146:89966

REFERENCE 5: 145:429111

REFERENCE 6: 145:365960

REFERENCE 7: 145:302328

REFERENCE 8: 145:237981

REFERENCE 9: 145:220705

REFERENCE 10: 145:198437

=> d ide can l13

L13 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 864429-52-7 REGISTRY
 ED Entered STN: 04 Oct 2005
 CN Barium europium strontium silicate (Ba0.05Eu0.05Sr1.9(SiO4)) (CA INDEX
 NAME)
 MF Ba . Eu . O4 Si . Sr
 AF Ba0.05 Eu0.05 O4 Si Sr1.9
 CI TIS
 SR CA
 LC STN Files: CA, CAPLUS, USPATFULL

Component	Ratio	Component Registry Number
=====	=====	=====
O4Si	1	17181-37-2
Eu	0.05	7440-53-1
Ba	0.05	7440-39-3
Sr	1.9	7440-24-6

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

1 REFERENCES IN FILE CA (1907 TO DATE)
 1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 143:295248

=> d ide can l14

L14 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 864429-53-8 REGISTRY
 ED Entered STN: 04 Oct 2005
 CN Calcium europium strontium silicate (Ca0.72Eu0.12Sr1.16(SiO4)) (CA INDEX
 NAME)
 MF Ca . Eu . O4 Si . Sr
 AF Ca0.72 Eu0.12 O4 Si Sr1.16
 CI TIS
 SR CA
 LC STN Files: CA, CAPLUS, USPATFULL

Component	Ratio	Component Registry Number
=====	=====	=====
O4Si	1	17181-37-2
Ca	0.72	7440-70-2
Eu	0.12	7440-53-1
Sr	1.16	7440-24-6

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

1 REFERENCES IN FILE CA (1907 TO DATE)
 1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 143:295248

=> d ide can l15

L15 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 841303-43-3 REGISTRY
 ED Entered STN: 03 Mar 2005
 CN Barium calcium strontium bromide chloride fluoride hydroxide phosphate
 ([Ba,Ca,Sr,Br,Cl,F,(OH)]5(PO4)3) (CA INDEX NAME)
 OTHER CA INDEX NAMES:
 CN Barium calcium strontium bromide chloride fluoride hydroxide phosphate
 ((Ba,Ca,Sr)5[Br,Cl,F,(OH)](PO4)3) (9CI)
 DR 881838-35-3
 MF Ba . Br . Ca . Cl . F . H O . O4 P . Sr
 AF Ba0-5 Br0-1 Ca0-5 Cl0-1 F0-1 H0-1 O12-13 P3 Sr0-5
 CI TIS
 SR CA
 LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component	Ratio	Component Registry Number
Cl	0 - 1	22537-15-1
F	0 - 1	14762-94-8
HO	0 - 1	14280-30-9
O4P	3	14265-44-2
Br	0 - 1	10097-32-2
Ca	0 - 5	7440-70-2
Ba	0 - 5	7440-39-3
Sr	0 - 5	7440-24-6

15 REFERENCES IN FILE CA (1907 TO DATE)

15 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 146:510061

REFERENCE 2: 146:510060

REFERENCE 3: 146:89966

REFERENCE 4: 145:429111

REFERENCE 5: 145:365960

REFERENCE 6: 145:302328

REFERENCE 7: 145:237981

REFERENCE 8: 145:220705

REFERENCE 9: 145:198437

REFERENCE 10: 144:360005

=> d ide can l3

L3 ANSWER 1 OF 2 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 841303-44-4 REGISTRY
 ED Entered STN: 03 Mar 2005
 CN Barium calcium strontium borate metaphosphate ((Ba,Ca,Sr)(BO2)(PO3)) (CA

INDEX NAME)
 DR 872458-23-6, 875485-02-2, 877397-53-0
 MF B O2 . Ba . Ca . O3 P . Sr
 AF B Ba0-1 Ca0-1 O5 P Sr0-1
 CI TIS
 SR CA
 LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component	Ratio	Component Registry Number
O3P	1	15389-19-2
BO2	1	14100-65-3
Ca	0 - 1	7440-70-2
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6

16 REFERENCES IN FILE CA (1907 TO DATE)
 16 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 146:510061
 REFERENCE 2: 146:510060
 REFERENCE 3: 146:89966
 REFERENCE 4: 145:429111
 REFERENCE 5: 145:365960
 REFERENCE 6: 145:302328
 REFERENCE 7: 145:237981
 REFERENCE 8: 145:220705
 REFERENCE 9: 145:198437
 REFERENCE 10: 145:133778

=> d ide can l3 2

L3 ANSWER 2 OF 2 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 112266-26-9 REGISTRY
 ED Entered STN: 09 Jan 1988
 CN Barium calcium strontium borate metaphosphate oxide
 ((Ba,Ca,Sr)2(BO3)0.2(PO3)1.8O0.8) (CA INDEX NAME)
 MF B O3 . Ba . Ca . O3 P . O . Sr
 AF B0.2 Ba0-2 Ca0-2 O6.8 P1.8 Sr0-2
 CI TIS
 SR CA
 LC STN Files: CA, CAPLUS, USPATFULL

Component	Ratio	Component Registry Number
O	0.8	17778-80-2
O3P	1.8	15389-19-2
BO3	0.2	14213-97-9

Ca		0 - 2		7440-70-2
Ba		0 - 2		7440-39-3
Sr		0 - 2		7440-24-6

1 REFERENCES IN FILE CA (1907 TO DATE)
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 108:46590

=> d ide can 15

L5 ANSWER 1 OF 2 REGISTRY COPYRIGHT 2008 ACS on STN
RN 841303-45-5 REGISTRY
ED Entered STN: 03 Mar 2005
CN Calcium strontium borate phosphate ((Ca,Sr)10(BO2)2(PO4)6) (CA INDEX NAME)
MF B O2 . Ca . O4 P . Sr
AF B2 Ca0-10 O28 P6 Sr0-10
CI TIS
SR CA
LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component		Ratio		Component Registry Number
O4P		6		14265-44-2
BO2		2		14100-65-3
Ca		0 - 10		7440-70-2
Sr		0 - 10		7440-24-6

1 REFERENCES IN FILE CA (1907 TO DATE)
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 142:228239

=> d ide can 15 2

L5 ANSWER 2 OF 2 REGISTRY COPYRIGHT 2008 ACS on STN
RN 675819-80-4 REGISTRY
ED Entered STN: 16 Apr 2004
CN Calcium strontium boride oxide phosphate ((Ca,Sr,B,O)10(PO4)6) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN Boron calcium strontium oxide phosphate (B0-2(Ca,Sr)10O0-3(PO4)6) (9CI)
MF B . Ca . O4 P . O . Sr
AF B0-2 Ca0-10 O24-27 P6 Sr0-10
CI TIS
SR CA
LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component		Ratio		Component Registry Number
O		0 - 3		17778-80-2
O4P		6		14265-44-2
Ca		0 - 10		7440-70-2
B		0 - 2		7440-42-8
Sr		0 - 10		7440-24-6

6 REFERENCES IN FILE CA (1907 TO DATE)
6 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 146:510061
REFERENCE 2: 146:510060
REFERENCE 3: 146:89966
REFERENCE 4: 145:237981
REFERENCE 5: 145:198437
REFERENCE 6: 140:294463

=> d ide can l16

L16 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
RN 144920-98-9 REGISTRY
ED Entered STN: 16 Dec 1992
CN Strontium borate metaphosphate oxide (Sr2(BO3)0.32(PO3)1.68O0.68) (CA
INDEX NAME)
OTHER NAMES:
CN Strontium borate oxide phosphite (Sr2(BO3)0.32O0.68(PO3)1.68)
DR 917195-11-0, 114868-29-0
MF B O3 . O3 P . O . Sr
AF B0.32 O6.68 P1.68 Sr2
CI TIS
SR CA
LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component	Ratio	Component Registry Number
O	0.68	17778-80-2
O3P	1.68	15389-19-2
BO3	0.32	14213-97-9
Sr	2	7440-24-6

21 REFERENCES IN FILE CA (1907 TO DATE)
1 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
21 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 147:531096
REFERENCE 2: 146:510061
REFERENCE 3: 146:510060
REFERENCE 4: 146:89966
REFERENCE 5: 145:237981
REFERENCE 6: 145:220705
REFERENCE 7: 145:198437
REFERENCE 8: 145:133778

REFERENCE 9: 144:339874

REFERENCE 10: 144:201773

=> d ide can 117

L17 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN

RN 11084-89-2 REGISTRY

ED Entered STN: 16 Nov 1984

CN Silicon strontium chloride oxide (Si3Sr4Cl4O8) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN Strontium chloride silicate (Sr4Cl4(Si3O8)) (8CI)

OTHER NAMES:

CN Strontium chlorosilicate (Sr4Cl4Si3O8)

MF Cl . O . Si . Sr

AF Cl4 O8 Si3 Sr4

CI TIS

LC STN Files: CA, CAPLUS, IFICDB, IFIPAT, IFIUDB, TOXCENTER, USPAT2,
USPATFULL

Component	Ratio	Component Registry Number
Cl	4	22537-15-1
O	8	17778-80-2
Sr	4	7440-24-6
Si	3	7440-21-3

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

27 REFERENCES IN FILE CA (1907 TO DATE)

3 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA

27 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 148:178888

REFERENCE 2: 145:462557

REFERENCE 3: 145:302328

REFERENCE 4: 145:220705

REFERENCE 5: 145:198437

REFERENCE 6: 145:52615

REFERENCE 7: 144:378173

REFERENCE 8: 143:295248

REFERENCE 9: 142:381835

REFERENCE 10: 136:408822

=> d ide can 118

L18 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 20775-37-5 REGISTRY
 ED Entered STN: 16 Nov 1984
 CN Silicic acid (H4SiO4), barium magnesium salt (2:3:1) (8CI, 9CI) (CA INDEX NAME)
 OTHER CA INDEX NAMES:
 CN Barium magnesium silicate (Ba3MgSi2O8) (6CI)
 OTHER NAMES:
 CN Barium magnesium silicate (Ba3Mg(SiO4)2)
 DR 947391-54-0, 477564-42-4, 37240-56-5
 MF Ba . 2/3 H4 O4 Si . 1/3 Mg
 LC STN Files: CA, CAOLD, CAPLUS, IFICDB, IFIPAT, IFIADB, USPAT2, USPATFULL, USPATOLD
 CRN (10193-36-9)



● 3/2 Ba

● 1/2 Mg

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

58 REFERENCES IN FILE CA (1907 TO DATE)
 2 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
 58 REFERENCES IN FILE CAPLUS (1907 TO DATE)
 1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

REFERENCE 1: 148:318326
 REFERENCE 2: 147:311511
 REFERENCE 3: 147:104841
 REFERENCE 4: 146:110912
 REFERENCE 5: 146:89383
 REFERENCE 6: 146:15314
 REFERENCE 7: 145:496868
 REFERENCE 8: 145:480177
 REFERENCE 9: 145:429111
 REFERENCE 10: 145:365960

=> d ide can 119

L19 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 75125-60-5 REGISTRY
 ED Entered STN: 16 Nov 1984
 CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)
 OTHER CA INDEX NAMES:
 CN Aluminate (Al14O258-), strontium (1:4)
 OTHER NAMES:
 CN Strontium aluminate (Sr4Al14O25)
 DR 875766-10-2, 371779-84-9
 MF Al . O . Sr
 AF Al14 O25 Sr4
 CI COM, TIS
 LC STN Files: CA, CAPLUS, CHEMCATS, CHEMLIST, TOXCENTER, USPAT2, USPATFULL
 Other Sources: EINECS**
 (**Enter CHEMLIST File for up-to-date regulatory information)

Component	Ratio	Component Registry Number
O	25	17778-80-2
Sr	4	7440-24-6
Al	14	7429-90-5

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

236 REFERENCES IN FILE CA (1907 TO DATE)
 5 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
 236 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 148:596250
 REFERENCE 2: 148:595300
 REFERENCE 3: 148:572104
 REFERENCE 4: 148:572103
 REFERENCE 5: 148:572102
 REFERENCE 6: 148:526277
 REFERENCE 7: 148:458005
 REFERENCE 8: 148:451300
 REFERENCE 9: 148:413876
 REFERENCE 10: 148:390390

=> d ide can l20

L20 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 97358-83-3 REGISTRY
 ED Entered STN: 27 Jul 1985
 CN Aluminum barium oxide (Al8BaO13) (CA INDEX NAME)
 OTHER CA INDEX NAMES:
 CN Aluminate (Al8O132-), barium (1:1)

OTHER NAMES:

CN Barium aluminate (BaAl8O13)
 MF Al . Ba . O
 AF Al8 Ba O13
 CI TIS
 SR European Union (EU)
 LC STN Files: CA, CAPLUS, CHEMCATS, CHEMLIST, USPAT2, USPATFULL
 Other Sources: EINECS**
 (**Enter CHEMLIST File for up-to-date regulatory information)

Component	Ratio	Component Registry Number
O	13	17778-80-2
Ba	1	7440-39-3
Al	8	7429-90-5

28 REFERENCES IN FILE CA (1907 TO DATE)
 28 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 146:510061
 REFERENCE 2: 146:510060
 REFERENCE 3: 146:89966
 REFERENCE 4: 145:429111
 REFERENCE 5: 145:365960
 REFERENCE 6: 145:302328
 REFERENCE 7: 145:237981
 REFERENCE 8: 145:220705
 REFERENCE 9: 145:198437
 REFERENCE 10: 145:133778

=> d ide can l21

L21 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 675819-82-6 REGISTRY
 ED Entered STN: 16 Apr 2004
 CN Aluminum barium calcium strontium oxide (Al2(Ba,Ca,Sr)O4) (CA INDEX NAME)
 OTHER NAMES:
 CN Barium calcium strontium aluminate (Ba0-1Ca0-1Sr0-1Al2O4)
 MF Al . Ba . Ca . O . Sr
 AF Al2 Ba0-1 Ca0-1 O4 Sr0-1
 CI TIS
 SR CA
 LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component	Ratio	Component Registry Number
O	4	17778-80-2
Ca	0 - 1	7440-70-2

Ba		0 - 1		7440-39-3
Sr		0 - 1		7440-24-6
Al		2		7429-90-5

22 REFERENCES IN FILE CA (1907 TO DATE)
22 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 146:510061
REFERENCE 2: 146:510060
REFERENCE 3: 146:89966
REFERENCE 4: 146:71463
REFERENCE 5: 145:462599
REFERENCE 6: 145:429111
REFERENCE 7: 145:365960
REFERENCE 8: 145:302328
REFERENCE 9: 145:237981
REFERENCE 10: 145:220705

=> d ide can l22

L22 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
RN 675819-83-7 REGISTRY
ED Entered STN: 16 Apr 2004
CN Gadolinium lanthanum lutetium scandium yttrium borate
((Gd,La,Lu,Sc,Y)(BO3)) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN Gadolinium lanthanum lutetium scandium yttrium borate
((Ga,La,Lu,Sc,Y)(BO3)) (9CI)
OTHER NAMES:
CN Gadolinium lanthanum lutetium scandium yttrium borate (Gd0-1La0-1Lu0-1Sc0-1Y0-1BO3)
MF B O3 . Gd . La . Lu . Sc . Y
AF B Gd0-1 La0-1 Lu0-1 O3 Sc0-1 Y0-1
CI TIS
SR CA
LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component		Ratio		Component Registry Number
BO3		1		14213-97-9
Y		0 - 1		7440-65-5
Gd		0 - 1		7440-54-2
Sc		0 - 1		7440-20-2
Lu		0 - 1		7439-94-3
La		0 - 1		7439-91-0

18 REFERENCES IN FILE CA (1907 TO DATE)
18 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 146:510061
 REFERENCE 2: 146:510060
 REFERENCE 3: 146:89966
 REFERENCE 4: 145:429111
 REFERENCE 5: 145:365960
 REFERENCE 6: 145:302328
 REFERENCE 7: 145:237981
 REFERENCE 8: 145:220705
 REFERENCE 9: 145:198437
 REFERENCE 10: 145:133778

=> d ide can 123

L23 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 675819-85-9 REGISTRY
 ED Entered STN: 16 Apr 2004
 CN Barium calcium magnesium strontium zinc silicate
 ((Ba,Ca,Mg,Sr,Zn)2(Si2O7)) (CA INDEX NAME)
 OTHER CA INDEX NAMES:
 CN Barium calcium magnesium strontium zinc silicate
 ((Ba,Ca,Sr)2(Mg,Zn)(Si2O7)) (9CI)
 MF Ba . Ca . Mg . O7 Si2 . Sr . Zn
 AF Ba0-2 Ca0-2 Mg0-1 O7 Si2 Sr0-2 Zn0-1
 CI TIS
 SR CA
 LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component	Ratio	Component Registry Number
O7Si2	1	20617-83-8
Ca	0 - 2	7440-70-2
Zn	0 - 1	7440-66-6
Ba	0 - 2	7440-39-3
Sr	0 - 2	7440-24-6
Mg	0 - 1	7439-95-4

8 REFERENCES IN FILE CA (1907 TO DATE)
 8 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 147:415981
 REFERENCE 2: 146:89966
 REFERENCE 3: 145:429111
 REFERENCE 4: 145:220705
 REFERENCE 5: 145:198437

REFERENCE 6: 144:97410
 REFERENCE 7: 143:295248
 REFERENCE 8: 140:294463

=> d ide can 124

L24 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 675819-36-0 REGISTRY
 ED Entered STN: 16 Apr 2004
 CN Aluminum barium calcium gallium indium strontium sulfide
 ((Al,Ga,In)2(Ba,Ca,Sr)S4) (CA INDEX NAME)
 DR 841303-49-9
 MF Al . Ba . Ca . Ga . In . S . Sr
 AF Al0-2 Ba0-1 Ca0-1 Ga0-2 In0-2 S4 Sr0-1
 CI TIS
 SR CA
 LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component	Ratio	Component Registry Number
S	4	7704-34-9
In	0 - 2	7440-74-6
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	0 - 2	7429-90-5

19 REFERENCES IN FILE CA (1907 TO DATE)
 19 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 148:108817
 REFERENCE 2: 146:510061
 REFERENCE 3: 146:510060
 REFERENCE 4: 146:89966
 REFERENCE 5: 145:429111
 REFERENCE 6: 145:365960
 REFERENCE 7: 145:302328
 REFERENCE 8: 145:237981
 REFERENCE 9: 145:220705
 REFERENCE 10: 145:198437

=> d ide can 125

L25 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 864429-55-0 REGISTRY

ED Entered STN: 04 Oct 2005
 CN Aluminum gadolinium gallium lanthanum lutetium praseodymium samarium
 terbium yttrium oxide ((Al,Ga)5(Gd,La,Lu,Pr,Sm,Tb,Y)3O12) (9CI) (CA INDEX
 NAME)
 OTHER NAMES:
 CN Aluminum gadolinium gallium lanthanum lutetium praseodymium samarium
 terbium yttrium oxide (Al0-5Gd0-3Ga0-5La0-3Lu0-3Pr0-3Sm0-3Tb0-3Y0-3O12)
 MF Al . Ga . Gd . La . Lu . O . Pr . Sm . Tb . Y
 AF Al0-5 Ga0-5 Gd0-3 La0-3 Lu0-3 O12 Pr0-3 Sm0-3 Tb0-3 Y0-3
 CI TIS
 SR CA
 LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component	Ratio	Component Registry Number
O	12	17778-80-2
Y	0 - 3	7440-65-5
Ga	0 - 5	7440-55-3
Gd	0 - 3	7440-54-2
Tb	0 - 3	7440-27-9
Sm	0 - 3	7440-19-9
Pr	0 - 3	7440-10-0
Lu	0 - 3	7439-94-3
La	0 - 3	7439-91-0
Al	0 - 5	7429-90-5

10 REFERENCES IN FILE CA (1907 TO DATE)
 10 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 145:429111
 REFERENCE 2: 145:365960
 REFERENCE 3: 145:302328
 REFERENCE 4: 145:220705
 REFERENCE 5: 144:360005
 REFERENCE 6: 144:263269
 REFERENCE 7: 144:159974
 REFERENCE 8: 144:97410
 REFERENCE 9: 143:396086
 REFERENCE 10: 143:295248

=> d ide can l26

L26 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 841303-50-2 REGISTRY
 ED Entered STN: 03 Mar 2005
 CN Calcium magnesium strontium zinc chloride silicate
 ((Ca,Mg,Sr,Zn)8Cl12(SiO4)4) (CA INDEX NAME)
 OTHER CA INDEX NAMES:
 CN Calcium magnesium strontium zinc chloride silicate

((Ca,Sr)8(Mg,Zn)Cl2(SiO4)4) (9CI)

OTHER NAMES:

CN Calcium magnesium strontium zinc chloride silicate (Ca0-8Mg0-1Sr0-8Zn0-1Cl2(SiO4)4)

MF Ca . Cl . Mg . O4 Si . Sr . Zn

AF Ca0-8 Cl2 Mg0-1 O16 Si4 Sr0-8 Zn0-1

CI TIS

SR CA

LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component	Ratio	Component Registry Number
Cl	2	22537-15-1
O4Si	4	17181-37-2
Ca	0 - 8	7440-70-2
Zn	0 - 1	7440-66-6
Sr	0 - 8	7440-24-6
Mg	0 - 1	7439-95-4

17 REFERENCES IN FILE CA (1907 TO DATE)

17 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 146:510061

REFERENCE 2: 146:510060

REFERENCE 3: 146:89966

REFERENCE 4: 145:429111

REFERENCE 5: 145:365960

REFERENCE 6: 145:302328

REFERENCE 7: 145:237981

REFERENCE 8: 145:220705

REFERENCE 9: 145:198437

REFERENCE 10: 144:360005

=> d ide can 127

L27 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN

RN 223757-06-0 REGISTRY

ED Entered STN: 28 May 1999

CN Gadolinium sodium borate oxide (Gd2Na2(BO3)2O) (CA INDEX NAME)

MF B O3 . Gd . Na . O

AF B2 Gd2 Na2 O7

CI TIS

SR CA

LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component	Ratio	Component Registry Number
O	1	17778-80-2

BO3		2		14213-97-9
Gd		2		7440-54-2
Na		2		7440-23-5

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

19 REFERENCES IN FILE CA (1907 TO DATE)
 19 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 146:510061
 REFERENCE 2: 146:510060
 REFERENCE 3: 146:89966
 REFERENCE 4: 145:429111
 REFERENCE 5: 145:423975
 REFERENCE 6: 145:365960
 REFERENCE 7: 145:302328
 REFERENCE 8: 145:237981
 REFERENCE 9: 145:220705
 REFERENCE 10: 145:198437

=> d ide can 128

L28 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 841303-51-3 REGISTRY
 ED Entered STN: 03 Mar 2005
 CN Barium calcium magnesium strontium zinc borate ((Ba,Sr)2(Ca,Mg,Zn)(BO3)2)
 (9CI) (CA INDEX NAME)
 MF B O3 . Ba . Ca . Mg . Sr . Zn
 AF B2 Ba0-2 Ca0-1 Mg0-1 O6 Sr0-2 Zn0-1
 CI TIS
 SR CA
 LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component	Ratio	Component Registry Number
BO3	2	14213-97-9
Ca	0 - 1	7440-70-2
Zn	0 - 1	7440-66-6
Ba	0 - 2	7440-39-3
Sr	0 - 2	7440-24-6
Mg	0 - 1	7439-95-4

10 REFERENCES IN FILE CA (1907 TO DATE)
 10 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 145:429111
 REFERENCE 2: 145:365960

REFERENCE 3: 145:302328
 REFERENCE 4: 145:220705
 REFERENCE 5: 144:263269
 REFERENCE 6: 144:159974
 REFERENCE 7: 144:97410
 REFERENCE 8: 143:396050
 REFERENCE 9: 143:295248
 REFERENCE 10: 142:228239

=> d ide can 129

L29 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 964429-56-1 REGISTRY
 ED Entered STN: 04 Oct 2005
 CN Barium calcium magnesium strontium zinc metaphosphate oxide
 ((Ba,Ca,Mg,Sr,Zn)2(PO3)2O) (CA INDEX NAME)
 MF Ba . Ca . Mg . O3 P . O . Sr . Zn
 AF Ba0-2 Ca0-2 Mg0-2 O7 P2 Sr0-2 Zn0-2
 CI TIS
 SR CA
 LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component	Ratio	Component Registry Number
O	1	17778-80-2
O3P	2	15389-19-2
Ca	0 - 2	7440-70-2
Zn	0 - 2	7440-66-6
Ba	0 - 2	7440-39-3
Sr	0 - 2	7440-24-6
Mg	0 - 2	7439-95-4

14 REFERENCES IN FILE CA (1907 TO DATE)
 14 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 148:178888
 REFERENCE 2: 146:510061
 REFERENCE 3: 146:510060
 REFERENCE 4: 145:429111
 REFERENCE 5: 145:365960
 REFERENCE 6: 145:302328
 REFERENCE 7: 145:237981
 REFERENCE 8: 145:198437

REFERENCE 9: 144:360005

REFERENCE 10: 144:263269

=> d ide can l30

L30 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 675819-79-1 REGISTRY
 ED Entered STN: 16 Apr 2004
 CN Barium calcium magnesium strontium bromide chloride fluoride hydroxide
 phosphate ((Ba,Ca,Mg,Sr)5[Br,Cl,F,(OH)](PO4)3) (9CI) (CA INDEX NAME)
 MF Ba . Br . Ca . Cl . F . H O . Mg . O4 P . Sr
 AF Ba0-5 Br0-1 Ca0-5 Cl0-1 F0-1 H0-1 Mg0-5 O12-13 P3 Sr0-5
 CI TIS
 SR CA
 LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component	Ratio	Component Registry Number
Cl	0 - 1	22537-15-1
F	0 - 1	14762-94-8
HO	0 - 1	14280-30-9
O4P	3	14265-44-2
Br	0 - 1	10097-32-2
Ca	0 - 5	7440-70-2
Ba	0 - 5	7440-39-3
Sr	0 - 5	7440-24-6
Mg	0 - 5	7439-95-4

3 REFERENCES IN FILE CA (1907 TO DATE)
 3 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 144:360005

REFERENCE 2: 143:295248

REFERENCE 3: 140:294463

=> d ide can l31

L31 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 675819-90-6 REGISTRY
 ED Entered STN: 16 Apr 2004
 CN Gadolinium lanthanum lutetium yttrium oxide ((Gd,La,Lu,Y)2O3) (CA INDEX
 NAME)
 OTHER NAMES:
 CN Gadolinium lanthanum lutetium yttrium oxide (Gd0-2La0-2Lu0-2Y0-2O3)
 MF Gd . La . Lu . O . Y
 AF Gd0-2 La0-2 Lu0-2 O3 Y0-2
 CI TIS
 SR CA
 LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component	Ratio	Component Registry Number

O		3		17778-80-2
Y		0 - 2		7440-65-5
Gd		0 - 2		7440-54-2
Lu		0 - 2		7439-94-3
La		0 - 2		7439-91-0

17 REFERENCES IN FILE CA (1907 TO DATE)
 17 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 148:178888

REFERENCE 2: 146:510061

REFERENCE 3: 146:510060

REFERENCE 4: 146:89966

REFERENCE 5: 145:429111

REFERENCE 6: 145:365960

REFERENCE 7: 145:302328

REFERENCE 8: 145:237981

REFERENCE 9: 145:220705

REFERENCE 10: 145:198437

=> d ide can 132

L32 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 173525-28-5 REGISTRY
 ED Entered STN: 27 Feb 1996
 CN Gadolinium lanthanum lutetium yttrium oxide sulfide ((Gd,La,Lu,Y)2O2S)
 (CA INDEX NAME)
 OTHER NAMES:
 CN Gadolinium lanthanum lutetium yttrium oxide sulfide (Gd0-2La0-2Lu0-2Y0-
 2O2S)
 MF Gd . La . Lu . O . S . Y
 AF Gd0-2 La0-2 Lu0-2 O2 S Y0-2
 CI TIS
 SR CA
 LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component	Ratio	Component Registry Number
O	2	17778-80-2
S	1	7704-34-9
Y	0 - 2	7440-65-5
Gd	0 - 2	7440-54-2
Lu	0 - 2	7439-94-3
La	0 - 2	7439-91-0

19 REFERENCES IN FILE CA (1907 TO DATE)
 19 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 148:178888

REFERENCE 2: 146:510061
 REFERENCE 3: 146:510060
 REFERENCE 4: 146:89966
 REFERENCE 5: 145:429111
 REFERENCE 6: 145:302328
 REFERENCE 7: 145:237981
 REFERENCE 8: 145:220705
 REFERENCE 9: 145:198437
 REFERENCE 10: 144:360005

=> d ide can l33

L33 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 675819-91-7 REGISTRY
 ED Entered STN: 16 Apr 2004
 CN Gadolinium lanthanum lutetium vanadium yttrium oxide ((Gd,La,Lu,Y)VO4)
 (CA INDEX NAME)
 OTHER NAMES:
 CN Gadolinium lanthanum lutetium yttrium vanadate (Gd0-1La0-1Lu0-1Y0-1VO4)
 MF Gd . La . Lu . O . V . Y
 AF Gd0-1 La0-1 Lu0-1 O4 V Y0-1
 CI TIS
 SR CA
 LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component	Ratio	Component Registry Number
O	4	17778-80-2
Y	0 - 1	7440-65-5
V	1	7440-62-2
Gd	0 - 1	7440-54-2
Lu	0 - 1	7439-94-3
La	0 - 1	7439-91-0

17 REFERENCES IN FILE CA (1907 TO DATE)
 17 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 146:510061
 REFERENCE 2: 146:510060
 REFERENCE 3: 146:89966
 REFERENCE 4: 145:429111
 REFERENCE 5: 145:365960
 REFERENCE 6: 145:302328

REFERENCE 7: 145:237981
 REFERENCE 8: 145:220705
 REFERENCE 9: 145:198437
 REFERENCE 10: 144:360005

=> d ide can 134

L34 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 92992-94-7 REGISTRY
 ED Entered STN: 19 May 1989
 CN Calcium strontium sulfide ((Ca,Sr)S) (CA INDEX NAME)
 DR 113921-06-5
 MF Ca . S . Sr
 AF Ca0-1 S Sr0-1
 CI TIS
 LC STN Files: CA, CAPLUS, TOXCENTER, USPAT2, USPATFULL

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0 - 1	7440-70-2
Sr	0 - 1	7440-24-6

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

120 REFERENCES IN FILE CA (1907 TO DATE)
 3 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
 121 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 148:596250
 REFERENCE 2: 148:549355
 REFERENCE 3: 148:437141
 REFERENCE 4: 148:366337
 REFERENCE 5: 148:178888
 REFERENCE 6: 148:146434
 REFERENCE 7: 148:108817
 REFERENCE 8: 148:108792
 REFERENCE 9: 147:493835
 REFERENCE 10: 147:265389

=> d ide can 135

L35 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 12535-38-5 REGISTRY

ED Entered STN: 16 Nov 1984
 CN Yttrate(1-), dithioxo-, strontium (2:1) (9CI) (CA INDEX NAME)
 OTHER CA INDEX NAMES:
 CN Strontium yttrium sulfide (7CI)
 CN Strontium yttrium sulfide (SrY2S4) (8CI)
 DR 860027-79-8
 MF S2 Y . 1/2 Sr
 CI CCS
 LC STN Files: CA, CAOLD, CAPLUS, USPAT2, USPATFULL
 CRN (687124-90-9)

$\text{O}=\text{Y}=\text{S}$

● 1/2 Sr²⁺

46 REFERENCES IN FILE CA (1907 TO DATE)
 2 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
 46 REFERENCES IN FILE CAPLUS (1907 TO DATE)
 1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

REFERENCE 1: 148:42086
 REFERENCE 2: 147:476520
 REFERENCE 3: 147:104916
 REFERENCE 4: 146:510061
 REFERENCE 5: 146:510060
 REFERENCE 6: 146:450526
 REFERENCE 7: 146:110826
 REFERENCE 8: 146:89966
 REFERENCE 9: 145:513529
 REFERENCE 10: 145:513526

=> d ide can l36

L36 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 12525-03-0 REGISTRY
 ED Entered STN: 16 Nov 1984
 CN Calcium lanthanum sulfide (CaLa2S4) (CA INDEX NAME)
 OTHER CA INDEX NAMES:
 CN Lanthanate(1-), dithioxo-, calcium (2:1)
 MF Ca . La . S
 AF Ca La2 S4
 CI TIS
 LC STN Files: CA, CAOLD, CAPLUS, CHEMCATS, CHEMLIST, CSCHEM, USPAT2,
 USPATFULL
 Other Sources: EINECS**
 (**Enter CHEMLIST File for up-to-date regulatory information)

Component	Ratio	Component Registry Number
S	4	7704-34-9
Ca	1	7440-70-2
La	2	7439-91-0

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

102 REFERENCES IN FILE CA (1907 TO DATE)
 2 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
 102 REFERENCES IN FILE CAPLUS (1907 TO DATE)
 2 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

REFERENCE 1: 148:178888

REFERENCE 2: 146:510061

REFERENCE 3: 146:510060

REFERENCE 4: 146:89966

REFERENCE 5: 145:513526

REFERENCE 6: 145:462599

REFERENCE 7: 145:462557

REFERENCE 8: 145:429111

REFERENCE 9: 145:365960

REFERENCE 10: 145:324608

=> d ide can 137

L37 ANSWER 1 OF 2 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 193361-69-2 REGISTRY
 ED Entered STN: 29 Aug 1997
 CN Germanium magnesium fluoride oxide (GeMg4FO6) (CA INDEX NAME)
 MF F . Ge . Mg . O
 AF F Ge Mg4 O6
 CI TIS
 SR CA
 LC STN Files: CA, CAPLUS, TOXCENTER, USPATFULL

Component	Ratio	Component Registry Number
O	6	17778-80-2
F	1	14762-94-8
Ge	1	7440-56-4
Mg	4	7439-95-4

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

17 REFERENCES IN FILE CA (1907 TO DATE)
 17 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 147:551008
 REFERENCE 2: 147:17648
 REFERENCE 3: 145:52634
 REFERENCE 4: 143:295248
 REFERENCE 5: 143:237646
 REFERENCE 6: 143:219278
 REFERENCE 7: 142:400166
 REFERENCE 8: 142:344328
 REFERENCE 9: 140:83995
 REFERENCE 10: 140:65986

=> d ide can 138

L38 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 841303-46-6 REGISTRY
 ED Entered STN: 03 Mar 2005
 CN Barium calcium magnesium strontium metaphosphate oxide
 ((Ba,Ca,Sr)Mg(PO3)2O) (CA INDEX NAME)
 MF Ba . Ca . Mg . O3 P . O . Sr
 AF Ba0-1 Ca0-1 Mg O7 P2 Sr0-1
 CI TIS
 SR CA
 LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component	Ratio	Component Registry Number
O	1	17778-80-2
O3P	2	15389-19-2
Ca	0 - 1	7440-70-2
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Mg	1	7439-95-4

13 REFERENCES IN FILE CA (1907 TO DATE)
 13 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 148:178888
 REFERENCE 2: 146:510061
 REFERENCE 3: 146:510060
 REFERENCE 4: 145:429111
 REFERENCE 5: 145:365960

REFERENCE 6: 145:302328
 REFERENCE 7: 145:237981
 REFERENCE 8: 145:198437
 REFERENCE 9: 144:263269
 REFERENCE 10: 143:396086

=> d ide can 139

L39 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 941303--47-7 REGISTRY
 ED Entered STN: 03 Mar 2005
 CN Lutetium tungsten yttrium oxide ((Lu,Y)2WO6) (CA INDEX NAME)
 OTHER NAMES:
 CN Lutetium yttrium tungstate (Lu0-2Y0-2WO6)
 MF Lu . O . W . Y
 AF Lu0-2 O6 W Y0-2
 CI TIS
 SR CA
 LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component	Ratio	Component Registry Number
O	6	17778-80-2
Y	0 - 2	7440-65-5
W	1	7440-33-7
Lu	0 - 2	7439-94-3

16 REFERENCES IN FILE CA (1907 TO DATE)
 16 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 148:178888
 REFERENCE 2: 146:510061
 REFERENCE 3: 146:510060
 REFERENCE 4: 146:89966
 REFERENCE 5: 145:429111
 REFERENCE 6: 145:365960
 REFERENCE 7: 145:302328
 REFERENCE 8: 145:237981
 REFERENCE 9: 145:220705
 REFERENCE 10: 145:198437

=> d ide can 17

L7 ANSWER 1 OF 4 REGISTRY COPYRIGHT 2008 ACS on STN

RN 1000210-98-9 REGISTRY
 ED Entered STN: 17 Jan 2008
 CN Barium calcium strontium nitride silicide ((Ba,Ca,Sr)N10Si7) (CA INDEX NAME)
 MF Ba . Ca . N . Si . Sr
 AF Ba0-1 Ca0-1 N10 Si7 Sr0-1
 CI TIS
 SR CA
 LC STN Files: CA, CAPLUS

Component	Ratio	Component Registry Number
N	10	17778-88-0
Ca	0 - 1	7440-70-2
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Si	7	7440-21-3

1 REFERENCES IN FILE CA (1907 TO DATE)

1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 148:108828

=> d ide can l12

L12 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
 RN 127575-65-9 REGISTRY
 ED Entered STN: 08 Jun 1990
 CN Aluminum gallium indium nitride ((Al,Ga,In)N) (CA INDEX NAME)
 OTHER NAMES:
 CN Aluminum gallium indium nitride
 CN Aluminum gallium indium nitride (Al0-1Ga0-1In0-1N)
 CN Aluminum indium gallium nitride
 CN Indium aluminum gallium nitride
 CN Indium aluminum gallium nitride (In0-1Al0-1Ga0-1N)
 CN Indium gallium aluminum nitride
 DR 174141-60-7
 MF Al . Ga . In . N
 AF Al0-1 Ga0-1 In0-1 N
 CI TIS
 SR CA
 LC STN Files: CA, CAPLUS, TOXCENTER, USPAT2, USPATFULL

Component	Ratio	Component Registry Number
N	1	17778-88-0
In	0 - 1	7440-74-6
Ga	0 - 1	7440-55-3
Al	0 - 1	7429-90-5

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

2270 REFERENCES IN FILE CA (1907 TO DATE)

2 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA

2280 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 148:598703
 REFERENCE 2: 148:598579
 REFERENCE 3: 148:598527
 REFERENCE 4: 148:598419
 REFERENCE 5: 148:596359
 REFERENCE 6: 148:596356
 REFERENCE 7: 148:596226
 REFERENCE 8: 148:596174
 REFERENCE 9: 148:596101
 REFERENCE 10: 148:574147

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 FILE LAST UPDATED: 24 Jun 2008 (20080624/ED)

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L88 ANSWER 1 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN
 AN 2006:1339264 HCAPLUS Full-text
 DN 146:89966
 TI Red garnet phosphors for use in light-emitting
 devices
 IN Setlur, Anant Achyut; Srivastava, Alok Mani;
 Comanzo, Holly Ann; Gao, Yan; Radkov, Emil Vergilov
 PA USA
 SO U.S. Pat. Appl. Publ., 10pp., Cont.-in-part of U.S. Ser. No. 696,637.

CODEN: USXXCO

DT Patent
 LA English
 FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20060284196	A1	20061221	US 2005-285685	20051123 <--
	US 20050093442	A1	20050505	US 2003-696637	20031029 <--
	US 7094362	B2	20060822		
	WO 2007062136	A1	20070531	WO 2006-US45233	20061122
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
PRAI	US 2003-696637	A2	20031029 <--		
	US 2005-285685	A	20051123		
AB	Lighting apparatus is described which comprises lighting apparatus (e.g., a light-emitting diode, especially and InGaAlN-based device) emitting in the 200-500 nm region and a phosphor compns. having the formula $L1MmAaGgPpQqNnZz:Ce3+$ ($L = \geq 1$ of Li, Na, K, Rb, and/or Cs; $M = \geq 1$ of Be, Mg, Ca, Sr, Ba, Mn, Sn, Pb, and/or Zn; $A = \geq 1$ of Bi, Sb, In, Sc, Y, and/or rare earth elements; $G = Si$ and/or Ge; $Q = \geq 1$ of O, S, and/or Se; $Z = \geq 1$ of F, Cl, Br, and/or I; $0 \leq l \leq 1$; $2.5 \leq m \leq 5$; $1.5 \leq a \leq 2.5$; $2 \leq g \leq 2.5$; $0 \leq p \leq 1$; $0 \leq n \leq 1$; $0 \leq z \leq 1$; and $l+2m+3a+4g+5p = 2q+3n+z$). Blends of $L1MmAaGgPpQqNnZz:Ce3+$ and ≥ 1 adnln. phosphors are also described.				
IT	173525-28-5, Gadolinium lanthanum lutetium yttrium oxide sulfide (Gd0-2La0-2Lu0-2Y0-202S) 675819-90-6, Gadolinium lanthanum lutetium yttrium oxide (Gd0-2La0-2Lu0-2Y0-203) 675819-91-7, Gadolinium lanthanum lutetium yttrium vanadate (Gd0-1La0-1Lu0-1Y0-1V04) 173525-28-5, Gadolinium lanthanum lutetium yttrium oxide sulfide ((Gd,Lu,Y)2O3S) (CA INDEX NAME)				
RN	173525-28-5 HCAPLUS				
CN	Gadolinium lanthanum lutetium yttrium oxide sulfide ((Gd,Lu,Y)2O3S) (CA INDEX NAME)				

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
S	1	7704-34-9
Y	0 - 2	7440-65-5
Gd	0 - 2	7440-54-2
Lu	0 - 2	7439-94-3
La	0 - 2	7439-91-0

RN 675819-90-6 HCAPLUS

CN Gadolinium lanthanum lutetium yttrium oxide ((Gd,Lu,Y)2O3) (CA INDEX NAME)

Component	Ratio	Component
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		Registry Number
O	3	17778-80-2
Y	0 - 2	7440-65-5
Gd	0 - 2	7440-54-2
Lu	0 - 2	7439-94-3
La	0 - 2	7439-91-0

RN 675819-91-7 HCAPLUS

CN Gadolinium lanthanum lutetium vanadium yttrium oxide ((Gd,La,Lu,Y)VO₄)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	4	17778-80-2
Y	0 - 1	7440-65-5
V	1	7440-62-2
Gd	0 - 1	7440-54-2
Lu	0 - 1	7439-94-3
La	0 - 1	7439-91-0

IT 82992-94-7, Calcium strontium sulfide ((Ca,Sr)S)
RL: TEM (Technical or engineered material use); USES (Uses)
(cerium- and europium-activated; light sources
using cerium-activated phosphors in blends containing)

RN 82992-94-7 HCAPLUS

CN Calcium strontium sulfide ((Ca,Sr)S) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0 - 1	7440-70-2
Sr	0 - 1	7440-24-6

IT 223757-06-0, Gadolinium sodium borate oxide (Gd₂Na₂(BO₃)₂O)
675819-83-7, Gadolinium lanthanum lutetium scandium yttrium borate
(Gd₀-1La₀-1Lu₀-1Sc₀-1Y₀-1BO₃)
RL: TEM (Technical or engineered material use); USES (Uses)
(cerium- and terbium-activated; light sources using
cerium-activated phosphors in blends containing)

RN 223757-06-0 HCAPLUS

CN Gadolinium sodium borate oxide (Gd₂Na₂(BO₃)₂O) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
BO ₃	2	14213-97-9
Gd	2	7440-54-2
Na	2	7440-23-5

RN 675819-83-7 HCAPLUS

CN Gadolinium lanthanum lutetium scandium yttrium borate
((Gd,La,Lu,Sc,Y)(BO₃)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
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BO3		1		14213-97-9
Y		0 - 1		7440-65-5
Gd		0 - 1		7440-54-2
Sc		0 - 1		7440-20-2
Lu		0 - 1		7439-94-3
La		0 - 1		7439-91-0

IT 473908-57-5 841303-43-3 841303-44-4

841303-50-2, Calcium magnesium strontium zinc chloride silicate
(CaO-8MgO-1SrO-8ZnO-1Cl₂(SiO₄)₄)

RL: TEM (Technical or engineered material use); USES (Uses)
(europium- and manganese-activated; light sources
using cerium-activated phosphors in blends containing)

RN 473908-57-5 HCAPLUS

CN Aluminum barium calcium magnesium strontium oxide (Al10(Ba,Ca,Sr)MgO17)
(CA INDEX NAME)

Component		Ratio		Component Registry Number
O		17		17778-80-2
Ca		0 - 1		7440-70-2
Ba		0 - 1		7440-39-3
Sr		0 - 1		7440-24-6
Mg		1		7439-95-4
Al		10		7429-90-5

RN 841303-43-3 HCAPLUS

CN Barium calcium strontium bromide chloride fluoride hydroxide phosphate
([Ba,Ca,Sr,Br,Cl,F,(OH)]₅(PO₄)₃) (CA INDEX NAME)

Component		Ratio		Component Registry Number
Cl		0 - 1		22537-15-1
F		0 - 1		14762-94-8
HO		0 - 1		14280-30-9
O4P		3		14265-44-2
Br		0 - 1		10097-32-2
Ca		0 - 5		7440-70-2
Ba		0 - 5		7440-39-3
Sr		0 - 5		7440-24-6

RN 841303-44-4 HCAPLUS

CN Barium calcium strontium borate metaphosphate ((Ba,Ca,Sr)(BO₂)(PO₃)) (CA
INDEX NAME)

Component		Ratio		Component Registry Number
O3P		1		15389-19-2
BO2		1		14100-65-3
Ca		0 - 1		7440-70-2
Ba		0 - 1		7440-39-3
Sr		0 - 1		7440-24-6

RN 841303-50-2 HCAPLUS

CN Calcium magnesium strontium zinc chloride silicate
((Ca,Mg,Sr,Zn)8Cl₂(SiO₄)₄) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Cl	2	22537-15-1
O4Si	4	17181-37-2
Ca	0 - 8	7440-70-2
Zn	0 - 1	7440-66-6
Sr	0 - 8	7440-24-6
Mg	0 - 1	7439-95-4

IT 841303-47-7, Lutetium tungsten yttrium oxide ((Lu,Y)2WO6)
 RL: TEM (Technical or engineered material use); USES (Uses)
 (europium- and molybdenum-activated; light sources
 using cerium-activated phosphors in blends containing)
 RN 841303-47-7 HCAPLUS
 CN Lutetium tungsten yttrium oxide ((Lu,Y)2WO6) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	6	17778-80-2
Y	0 - 2	7440-65-5
W	1	7440-33-7
Lu	0 - 2	7439-94-3

IT 12525-03-0, Calcium lanthanum sulfide (CaLa2S4) 12535-38-5
 , Strontium yttrium sulfide (SrY2S4) 97358-83-3, Barium
 aluminate (BaAl8O13) 144920-98-9, Strontium borate metaphosphate
 oxide (Sr2(BO3)0.32(PO3)1.68O0.68) 675819-80-4, Calcium
 strontium boride oxide phosphate ((Ca,Sr,B,O)10(PO4)6) 675819-82-6
 , Barium calcium strontium aluminate (Ba0-1Ca0-1Sr0-1Al2O4)
 675819-85-9 675819-86-0 877397-55-2
 RL: TEM (Technical or engineered material use); USES (Uses)
 (europium-activated; light sources using
 cerium-activated phosphors in blends containing)
 RN 12525-03-0 HCAPLUS
 CN Calcium lanthanum sulfide (CaLa2S4) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
Ca	1	7440-70-2
La	2	7439-91-0

RN 12535-38-5 HCAPLUS
 CN Yttrate(1-), dithioxo-, strontium (2:1) (9CI) (CA INDEX NAME)



RN 97358-83-3 HCAPLUS
 CN Aluminum barium oxide (Al8BaO13) (CA INDEX NAME)

Component	Ratio	Component
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		Registry Number
O	13	17778-80-2
Ba	1	7440-39-3
Al	8	7429-90-5

RN 144920-98-9 HCAPLUS

CN Strontium borate metaphosphate oxide (Sr2(BO3)0.32(PO3)1.68O0.68) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.68	17778-80-2
O3P	1.68	15389-19-2
BO3	0.32	14213-97-9
Sr	2	7440-24-6

RN 675819-80-4 HCAPLUS

CN Calcium strontium boride oxide phosphate ((Ca,Sr,B,O)10(PO4)6) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0 - 3	17778-80-2
O4P	6	14265-44-2
Ca	0 - 10	7440-70-2
B	0 - 2	7440-42-8
Sr	0 - 10	7440-24-6

RN 675819-82-6 HCAPLUS

CN Aluminum barium calcium strontium oxide (Al2(Ba,Ca,Sr)O4) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	4	17778-80-2
Ca	0 - 1	7440-70-2
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	2	7429-90-5

RN 675819-85-9 HCAPLUS

CN Barium calcium magnesium strontium zinc silicate ((Ba,Ca,Mg,Sr,Zn)2(Si2O7)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O7Si2	1	20617-83-8
Ca	0 - 2	7440-70-2
Zn	0 - 1	7440-66-6
Ba	0 - 2	7440-39-3
Sr	0 - 2	7440-24-6
Mg	0 - 1	7439-95-4

RN 675819-86-0 HCAPLUS

CN Aluminum barium calcium gallium indium strontium sulfide ((Al,Ga,In)2(Ba,Ca,Sr)S4) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
In	0 - 2	7440-74-6
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	0 - 2	7429-90-5

RN 877397-55-2 HCAPLUS

CN Barium calcium strontium nitride silicide (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	x	17778-88-0
Ca	x	7440-70-2
Ba	x	7440-39-3
Sr	x	7440-24-6
Si	x	7440-21-3

IT 7440-45-1, Cerium, uses 18923-26-7, Cerium 3+, uses
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material
 use); USES (Uses)
 (light sources using cerium-activated phosphors and
 phosphor blends containing them)

RN 7440-45-1 HCAPLUS

CN Cerium (CA INDEX NAME)

Ce

RN 18923-26-7 HCAPLUS

CN Cerium, ion (Ce3+) (CA INDEX NAME)

Ce3+

IT 12159-91-0, Germanium magnesium fluoride oxide (GeMg4F05.5)

RL: TEM (Technical or engineered material use); USES (Uses)
 (manganese-activated; light sources using
 cerium-activated phosphors in blends containing)

RN 12159-91-0 HCAPLUS

CN Germanium magnesium fluoride oxide (Ge2Mg8F2011) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	11	17778-80-2
F	2	14762-94-8
Ge	2	7440-56-4
Mg	8	7439-95-4

L88 ANSWER 2 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2006:100758 HCAPLUS Full-text

DN 144:159974

TI White LEDs with tunable CRI

IN Radkov, Emil

PA Gelcore, LLC, USA

SO U.S. Pat. Appl. Publ., 20 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 7

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20060022582	A1	20060202	US 2004-909564	20040802
	WO 2006023100	A1	20060302	WO 2005-US23559	20050705
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
	RW:	AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	EP 1805806	A1	20070711	EP 2005-768175	20050705
	R:	AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR			
	CN 101032037	A	20070905	CN 2005-80033349	20050705
	JP 2008508742	T	20080321	JP 2007-524805	20050705
	US 20060071589	A1	20060406	US 2005-285122	20051122
	US 20060097245	A1	20060511	US 2005-312268	20051220 <--
	US 20060181192	A1	20060817	US 2006-400998	20060410
	US 20070241657	A1	20071018	US 2007-810024	20070604
PRAI	US 2002-407426P	P	20020830	<--	
	WO 2003-US27363	A2	20030829	<--	
	US 2004-831862	A2	20040426		
	US 2004-909564	A	20040802		
	WO 2005-US23559	W	20050705		
	US 2005-285122	A2	20051122		
AB	A lighting apparatus for emitting white light which can achieve a tunable color rendering index (CRI) and luminosity is described comprising a semiconductor light source emitting radiation having a peak emission at from about 250 to 500 nm; a first phosphor composition comprising at least one phosphor compound radiationally coupled to said light source; and a second phosphor composition comprising at least one phosphor compound radiationally coupled to said light source; wherein said first and second phosphor compns. have substantially the same emission color coordinates when excited by the same source radiation. A method for fabricating the lighting apparatus for emitting white light is also described.				
IT	7440-53-1, Europium, uses RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses) (green phosphor; white LEDs with tunable color rendering index by using two phosphor composition layers)				
RN	7440-53-1 HCAPLUS				
CN	Europium (CA INDEX NAME)				

Bu

IT 12525-03-0, Calcium lanthanum sulfide (CaLa2S4) 12535-38-5
 , Strontium yttrium sulfide (SrY2S4) 20775-37-5, Barium
 magnesium silicate (Ba3MgSi2O8) 76125-60-5, Aluminum strontium
 oxide (Al14Sr4O25) 82992-94-7, Calcium strontium sulfide
 ((Ca,Sr)S) 97358-83-3, Aluminum barium oxide (Al8BaO13)
 173525-38-5 223757-66-0, Gadolinium sodium borate oxide
 (Gd2Na2(BO3)2O) 473988-57-5 675819-82-6, Aluminum
 barium calcium strontium oxide (Al2(Ba,Ca,Sr)O4) 675819-83-7
 675819-84-8, Barium calcium strontium silicate ((Ba,Ca,Sr)2(SiO4))
 675819-86-0 675819-90-6 675819-91-7
 841303-43-3 841303-47-7, Lutetium tungsten yttrium oxide
 ((Lu,Y)2WO6) 841303-50-2 841303-51-3
 864429-55-0 864429-56-1

RL: DEV (Device component use); USES (Uses)

(white LEDs with tunable color rendering index by using two
 phosphor composition layers)

RN 12525-03-0 HCAPLUS

CN Calcium lanthanum sulfide (CaLa2S4) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
Ca	1	7440-70-2
La	2	7439-91-0

RN 12535-38-5 HCAPLUS

CN Yttrate(1-), dithioxo-, strontium (2:1) (9CI) (CA INDEX NAME)



RN 20775-37-5 HCAPLUS

CN Silicic acid (H4SiO4), barium magnesium salt (2:3:1) (8CI, 9CI) (CA INDEX NAME)



RN 76125-60-5 HCAPLUS

CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	25	17778-80-2
Sr	4	7440-24-6
Al	14	7429-90-5

RN 82992-94-7 HCAPLUS

CN Calcium strontium sulfide ((Ca,Sr)S) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0 - 1	7440-70-2
Sr	0 - 1	7440-24-6

RN 97358-83-3 HCAPLUS

CN Aluminum barium oxide (Al8BaO13) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	13	17778-80-2
Ba	1	7440-39-3
Al	8	7429-90-5

RN 173525-28-5 HCAPLUS

CN Gadolinium lanthanum lutetium yttrium oxide sulfide ((Gd,La,Lu,Y)2O2S)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
S	1	7704-34-9
Y	0 - 2	7440-65-5
Gd	0 - 2	7440-54-2
Lu	0 - 2	7439-94-3
La	0 - 2	7439-91-0

RN 223757-06-0 HCAPLUS

CN Gadolinium sodium borate oxide (Gd2Na2(BO3)2O) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
BO3	2	14213-97-9
Gd	2	7440-54-2
Na	2	7440-23-5

RN 473908-57-5 HCAPLUS

CN Aluminum barium calcium magnesium strontium oxide (Al10(Ba,Ca,Sr)MgO17)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	17	17778-80-2
Ca	0 - 1	7440-70-2
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Mg	1	7439-95-4
Al	10	7429-90-5

RN 675819-82-6 HCAPLUS

CN Aluminum barium calcium strontium oxide (Al₂(Ba,Ca,Sr)₄O₄) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	4	17778-80-2
Ca	0 - 1	7440-70-2
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	2	7429-90-5

RN 675819-83-7 HCAPLUS

CN Gadolinium lanthanum lutetium scandium yttrium borate
((Gd,La,Lu,Sc,Y)(BO₃)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
BO3	1	14213-97-9
Y	0 - 1	7440-65-5
Gd	0 - 1	7440-54-2
Sc	0 - 1	7440-20-2
Lu	0 - 1	7439-94-3
La	0 - 1	7439-91-0

RN 675819-84-8 HCAPLUS

CN Barium calcium strontium silicate ((Ba,Ca,Sr)₂(SiO₄)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	1	17181-37-2
Ca	0 - 2	7440-70-2
Ba	0 - 2	7440-39-3
Sr	0 - 2	7440-24-6

RN 675819-86-0 HCAPLUS

CN Aluminum barium calcium gallium indium strontium sulfide
((Al,Ga,In)₂(Ba,Ca,Sr)₄S₄) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
In	0 - 2	7440-74-6
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3

Sr		0 - 1		7440-24-6
Al		0 - 2		7429-90-5

RN 675819-90-6 HCAPLUS

CN Gadolinium lanthanum lutetium yttrium oxide ((Gd,La,Lu,Y)2O3) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		3		17778-80-2
Y		0 - 2		7440-65-5
Gd		0 - 2		7440-54-2
Lu		0 - 2		7439-94-3
La		0 - 2		7439-91-0

RN 675819-91-7 HCAPLUS

CN Gadolinium lanthanum lutetium vanadium yttrium oxide ((Gd,La,Lu,Y)VO4) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		4		17778-80-2
Y		0 - 1		7440-65-5
V		1		7440-62-2
Gd		0 - 1		7440-54-2
Lu		0 - 1		7439-94-3
La		0 - 1		7439-91-0

RN 841303-43-3 HCAPLUS

CN Barium calcium strontium bromide chloride fluoride hydroxide phosphate ((Ba,Ca,Sr,Br,Cl,F,(OH)]5(PO4)3) (CA INDEX NAME)

Component		Ratio		Component Registry Number
Cl		0 - 1		22537-15-1
F		0 - 1		14762-94-8
HO		0 - 1		14280-30-9
O4P		3		14265-44-2
Br		0 - 1		10097-32-2
Ca		0 - 5		7440-70-2
Ba		0 - 5		7440-39-3
Sr		0 - 5		7440-24-6

RN 841303-47-7 HCAPLUS

CN Lutetium tungsten yttrium oxide ((Lu,Y)2WO6) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		6		17778-80-2
Y		0 - 2		7440-65-5
W		1		7440-33-7
Lu		0 - 2		7439-94-3

RN 841303-50-2 HCAPLUS

CN Calcium magnesium strontium zinc chloride silicate ((Ca,Mg,Sr,Zn)8Cl2(SiO4)4) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Cl	2	22537-15-1
O4Si	4	17181-37-2
Ca	0 - 8	7440-70-2
Zn	0 - 1	7440-66-6
Sr	0 - 8	7440-24-6
Mg	0 - 1	7439-95-4

RN 841303-51-3 HCAPLUS

CN Barium calcium magnesium strontium zinc borate ((Ba,Sr)2(Ca,Mg,Zn)(BO3)2)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
BO3	2	14213-97-9
Ca	0 - 1	7440-70-2
Zn	0 - 1	7440-66-6
Ba	0 - 2	7440-39-3
Sr	0 - 2	7440-24-6
Mg	0 - 1	7439-95-4

RN 864429-55-0 HCAPLUS

CN Aluminum gadolinium gallium lanthanum lutetium praseodymium samarium
terbium yttrium oxide ((Al,Ga)5(Gd,La,Lu,Pr,Sm,Tb,Y)3O12) (9CI) (CA INDEX
NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Y	0 - 3	7440-65-5
Ga	0 - 5	7440-55-3
Gd	0 - 3	7440-54-2
Tb	0 - 3	7440-27-9
Sm	0 - 3	7440-19-9
Pr	0 - 3	7440-10-0
Lu	0 - 3	7439-94-3
La	0 - 3	7439-91-0
Al	0 - 5	7429-90-5

RN 864429-56-1 HCAPLUS

CN Barium calcium magnesium strontium zinc metaphosphate oxide
((Ba,Ca,Mg,Sr,Zn)2(PO3)2O) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O3P	2	15389-19-2
Ca	0 - 2	7440-70-2
Zn	0 - 2	7440-66-6
Ba	0 - 2	7440-39-3
Sr	0 - 2	7440-24-6
Mg	0 - 2	7439-95-4

IT 7439-96-5, Manganese, uses 7439-98-7, Molybdenum, uses

7440-09-7, Potassium, uses 7440-27-9, Terbium, uses
 7440-36-0, Antimony, uses 7440-45-1, Cerium, uses
 7440-69-9, Bismuth, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES
 (Uses)

(white LEDs with tunable color rendering index by using two
 phosphor composition layers)

RN 7439-96-5 HCAPLUS

CN Manganese (CA INDEX NAME)

Mn

RN 7439-98-7 HCAPLUS

CN Molybdenum (CA INDEX NAME)

Mo

RN 7440-09-7 HCAPLUS

CN Potassium (CA INDEX NAME)

K

RN 7440-27-9 HCAPLUS

CN Terbium (CA INDEX NAME)

Tb

RN 7440-36-0 HCAPLUS

CN Antimony (CA INDEX NAME)

Sb

RN 7440-45-1 HCAPLUS

CN Cerium (CA INDEX NAME)

Ce

RN 7440-69-9 HCAPLUS

CN Bismuth (CA INDEX NAME)

Bi

L88 ANSWER 3 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN
 AN 2005:1329796 HCAPLUS Full-text
 DN 144:60695
 TI Europium-activated phosphors containing oxides of rare-earth and
 group-IIIB metals and light sources using the
 phosphors
 IN Comacco, Holly Ann; Setlur, Anant Achyut;
 Srivastava, Alok Mani
 PA General Electric Company, USA
 SO U.S. Pat. Appl. Publ., 9 pp., Cont.-in-part of U.S. Ser. No.6,761,837.
 CODEN: USXXCO
 DT Patent
 LA English
 FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20050279969	A1	20051222	US 2004-779086	20040217 <--
	US 7022263	B2	20060404		
	US 20030230739	A1	20031218	US 2002-64121	20020612 <--
	US 6761837	B2	20040713		
	GB 2411176	A	20050824	GB 2004-27015	20041209 <--
	JP 2005232436	A	20050902	JP 2004-363776	20041216 <--
PRAI	US 2002-64121	A2	20020612	<--	
	US 2004-779086	A	20040217	<--	

AB Europium-activated phosphors are described which comprise oxides of at least a rare-earth metal selected from the group consisting of gadolinium, yttrium, lanthanum, and their combinations and at least a Group-IIIB metal selected from the group consisting of aluminum, gallium, indium, and their combinations, where the phosphors are capable of absorbing UV radiation and emitting in a visible wavelength range from about 580 nm to about 770 nm; and the phosphors are capable of absorbing at least 70 % of exciting UV radiation at wavelength of about 254 nm. The phosphors produced by such a method exhibit improved absorption in the UV wavelength range and improved quantum efficiency. Gas discharge-based light sources employing the phosphors in a blend are also discussed.

IT 7439-96-5, Manganese, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (europium-activated phosphors containing oxides of rare-earth and group-IIIB metals and light sources using phosphors)
 RN 7439-96-5 HCAPLUS
 CN Manganese (CA INDEX NAME)

Mn

IT 7440-93-1, Europium, properties
 RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (europium-activated phosphors containing oxides of rare-earth and group-IIIB metals and light sources using phosphors)

RN 7440-53-1 HCAPLUS
 CN Europium (CA INDEX NAME)

Ba

IT 76125-60-5, Aluminum strontium oxide (Al14Sr4O25)
 RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (europium-doped; europium-activated phosphors containing oxides of rare-earth and group-IIIB metals and light sources using phosphors)
 RN 76125-60-5 HCAPLUS
 CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	25	17778-80-2
Sr	4	7440-24-6
Al	14	7429-90-5

IT 7440-27-9, Terbium, properties 7440-45-1, Cerium, properties
 RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (lanthanum phosphate doped with; europium-activated phosphors containing oxides of rare-earth and group-IIIB metals and light sources using phosphors)
 RN 7440-27-9 HCAPLUS
 CN Terbium (CA INDEX NAME)

Tb

RN 7440-45-1 HCAPLUS
 CN Cerium (CA INDEX NAME)

Ce

IT 12159-91-0, Germanium magnesium fluoride oxide (GeMg4FO5.5)
 RL: DEV (Device component use); USES (Uses)
 (manganese-doped; europium-activated phosphors containing oxides of rare-earth and group-IIIB metals and light sources using phosphors)
 RN 12159-91-0 HCAPLUS
 CN Germanium magnesium fluoride oxide (Ge2Mg8F2O11) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	11	17778-80-2
F	2	14762-94-8

Ge		2		7440-56-4
Mg		8		7439-95-4

L88 ANSWER 4 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN
 AN 2005:1005726 HCAPLUS [Full-text](#)
 DN 143:295248
 TI Silicate phosphor and blends thereof for use in white light sources
 IN Setiur, Anant Achyut; Srivastava, Alok Mani;
 Comanzo, Holly Ann; Rancu, Dan; Velyou, Briel Linda
 Jana
 PA Gelcore LLC, USA
 SO U.S. Pat. Appl. Publ., 12 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	-----	-----	-----
PI	US 20050199897	A1	20050915	US 2004-797784	20040310 <--
	WO 2005091862	A2	20051006	WO 2005-US5546	20050222 <--
	WO 2005091862	A3	20060427		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	EP 1735816	A2	20061227	EP 2005-723455	20050222 <--
	R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR				
	CN 1938870	A	20070328	CN 2005-80009830	20050222 <--
	JP 2007528606	T	20071011	JP 2007-502833	20050222 <--
PRAI	US 2004-797784	A	20040310	<--	
	WO 2005-US5546	W	20050222	<--	
AB	Lighting apparatus for emitting white light is described which comprises a semiconductor light source (e.g., a light-emitting diode, especially an AlGaInN light-emitting diode) emitting radiation at 250-500 nm; and a phosphor composition radiationally coupled to the light source, the phosphor composition comprising (Ba,Sr,Ca)SiO ₄ :Eu (sic). Preferred blends include (Sr,Ba,Ca)SiO ₄ :Eu and ≥ 1 of (Sr,Mg,Ca,Ba,Zn)2P2O ₇ :Eu,Mn; (Ca,Sr,Ba,Mg)5(PO ₄)3(Cl,F,OH):Eu,Mn; (Sr,Ba,Ca)MgAl ₁₀ O ₁₇ :Eu,Mn; and Mg ₄ FGeO ₆ :Mn ⁴⁺ ; and ≥ 1 garnet phosphors having the general formula (Y,Gd,La,Lu,T,Pr,Sm)3(Al,Ga,In)5O ₁₂ :C e.				
IT	127575-65-9, Aluminum gallium indium nitride				
	RL: DEV (Device component use); USES (Uses)				
	(alkaline earth silicate phosphors and blends containing them for color conversion in electroluminescent devices based on)				
RN	127575-65-9 HCAPLUS				
CN	Aluminum gallium indium nitride ((Al,Ga,In)N) (CA INDEX NAME)				

Component		Ratio		Component
				Registry Number
=====+		=====+		

N		1		17778-88-0
In		0 - 1		7440-74-6
Ga		0 - 1		7440-55-3
Al		0 - 1		7429-90-5

IT 841303-43-3

RL: DEV (Device component use); USES (Uses)
 (antimony- and europium- and manganese-activated; white
 light sources using alkaline earth silicate phosphors in
 blends containing)

RN 841303-43-3 HCAPLUS

CN Barium calcium strontium bromide chloride fluoride hydroxide phosphate
 ([Ba,Ca,Sr,Br,Cl,F,(OH)]5(PO4)3) (CA INDEX NAME)

Component		Ratio		Component Registry Number
-----+-----+-----				
Cl		0 - 1		22537-15-1
F		0 - 1		14762-94-8
HO		0 - 1		14280-30-9
O4P		3		14265-44-2
Br		0 - 1		10097-32-2
Ca		0 - 5		7440-70-2
Ba		0 - 5		7440-39-3
Sr		0 - 5		7440-24-6

IT 173525-28-5 675819-90-6 675819-91-7

RL: DEV (Device component use); USES (Uses)
 (bismuth- and europium-activated; white light
 sources using alkaline earth silicate phosphors in blends
 containing)

RN 173525-28-5 HCAPLUS

CN Gadolinium lanthanum lutetium yttrium oxide sulfide ((Gd,Lu,Y)2O2S)
 (CA INDEX NAME)

Component		Ratio		Component Registry Number
-----+-----+-----				
O		2		17778-80-2
S		1		7704-34-9
Y		0 - 2		7440-65-5
Gd		0 - 2		7440-54-2
Lu		0 - 2		7439-94-3
La		0 - 2		7439-91-0

RN 675819-90-6 HCAPLUS

CN Gadolinium lanthanum lutetium yttrium oxide ((Gd,Lu,Y)2O3) (CA INDEX
 NAME)

Component		Ratio		Component Registry Number
-----+-----+-----				
O		3		17778-80-2
Y		0 - 2		7440-65-5
Gd		0 - 2		7440-54-2
Lu		0 - 2		7439-94-3
La		0 - 2		7439-91-0

RN 675819-91-7 HCAPLUS

CN Gadolinium lanthanum lutetium vanadium yttrium oxide ((Gd,Lu,Y)VO4)

(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	4	17778-80-2
Y	0 - 1	7440-65-5
V	1	7440-62-2
Gd	0 - 1	7440-54-2
Lu	0 - 1	7439-94-3
La	0 - 1	7439-91-0

IT 941303-51-3

RL: DEV (Device component use); USES (Uses)
 (cerium- and potassium- and terbium-activated; white
 light sources using alkaline earth silicate phosphors in
 blends containing)

RN 941303-51-3 HCAPLUS

CN Barium calcium magnesium strontium zinc borate ((Ba,Sr)₂(Ca,Mg,Zn)(BO₃)₂)
 (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
BO3	2	14213-97-9
Ca	0 - 1	7440-70-2
Zn	0 - 1	7440-66-6
Ba	0 - 2	7440-39-3
Sr	0 - 2	7440-24-6
Mg	0 - 1	7439-95-4

IT 223757-06-0, Gadolinium sodium borate oxide (Gd₂Na₂(BO₃)₂)
 675819-83-7

RL: DEV (Device component use); USES (Uses)
 (cerium- and terbium-activated; white light
 sources using alkaline earth silicate phosphors in blends
 containing)

RN 223757-06-0 HCAPLUS

CN Gadolinium sodium borate oxide (Gd₂Na₂(BO₃)₂) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
BO3	2	14213-97-9
Gd	2	7440-54-2
Na	2	7440-23-5

RN 675819-83-7 HCAPLUS

CN Gadolinium lanthanum lutetium scandium yttrium borate
 ((Gd,La,Lu,Sc,Y)(BO₃)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
BO3	1	14213-97-9
Y	0 - 1	7440-65-5
Gd	0 - 1	7440-54-2
Sc	0 - 1	7440-20-2
Lu	0 - 1	7439-94-3

La | 0 - 1 | 7439-91-0

IT 12525-03-0, Calcium lanthanum sulfide (CaLa2S4)

864429-55-0

RL: DEV (Device component use); USES (Uses)

(cerium-activated; white light sources

using alkaline earth silicate phosphors in blends containing)

RN 12525-03-0 HCAPLUS

CN Calcium lanthanum sulfide (CaLa2S4) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
Ca	1	7440-70-2
La	2	7439-91-0

RN 864429-55-0 HCAPLUS

CN Aluminum gadolinium gallium lanthanum lutetium praseodymium samarium
terbium yttrium oxide ((Al,Ga)5(Gd,La,Lu,Pr,Sm,Tb,Y)3O12) (9CI) (CA INDEX
NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Y	0 - 3	7440-65-5
Ga	0 - 5	7440-55-3
Gd	0 - 3	7440-54-2
Tb	0 - 3	7440-27-9
Sm	0 - 3	7440-19-9
Pr	0 - 3	7440-10-0
Lu	0 - 3	7439-94-3
La	0 - 3	7439-91-0
Al	0 - 5	7429-90-5

IT 473908-57-5 675819-79-1 841303-46-6

841303-50-2 864429-56-1

RL: DEV (Device component use); USES (Uses)

(europium- and manganese-activated; white light

sources using alkaline earth silicate phosphors in blends
containing)

RN 473908-57-5 HCAPLUS

CN Aluminum barium calcium magnesium strontium oxide (Al10(Ba,Ca,Sr)MgO17)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	17	17778-80-2
Ca	0 - 1	7440-70-2
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Mg	1	7439-95-4
Al	10	7429-90-5

RN 675819-79-1 HCAPLUS

CN Barium calcium magnesium strontium bromide chloride fluoride hydroxide
phosphate ((Ba,Ca,Mg,Sr)5[Br,Cl,F,(OH)](PO4)3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Cl	0 - 1	22537-15-1
F	0 - 1	14762-94-8
HO	0 - 1	14280-30-9
O4P	3	14265-44-2
Br	0 - 1	10097-32-2
Ca	0 - 5	7440-70-2
Ba	0 - 5	7440-39-3
Sr	0 - 5	7440-24-6
Mg	0 - 5	7439-95-4

RN 841303-46-6 HCAPLUS

CN Barium calcium magnesium strontium metaphosphate oxide
((Ba,Ca,Sr)Mg(PO₃)₂O) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O3P	2	15389-19-2
Ca	0 - 1	7440-70-2
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Mg	1	7439-95-4

RN 841303-50-2 HCAPLUS

CN Calcium magnesium strontium zinc chloride silicate
((Ca,Mg,Sr,Zn)8Cl₂(SiO₄)₄) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Cl	2	22537-15-1
O4Si	4	17181-37-2
Ca	0 - 8	7440-70-2
Zn	0 - 1	7440-66-6
Sr	0 - 8	7440-24-6
Mg	0 - 1	7439-95-4

RN 864429-56-1 HCAPLUS

CN Barium calcium magnesium strontium zinc metaphosphate oxide
((Ba,Ca,Mg,Sr,Zn)₂(PO₃)₂O) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O3P	2	15389-19-2
Ca	0 - 2	7440-70-2
Zn	0 - 2	7440-66-6
Ba	0 - 2	7440-39-3
Sr	0 - 2	7440-24-6
Mg	0 - 2	7439-95-4

IT 841303-47-7, Lutetium tungsten yttrium oxide ((Lu,Y)2WO₆)

RL: DEV (Device component use); USES (Uses)

(europium- and molybdenum-activated; white light

sources using alkaline earth silicate phosphors in blends

containing)

RN 841303-47-7 HCAPLUS

CN Lutetium tungsten yttrium oxide ((Lu,Y)2WO6) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	6	17778-80-2
Y	0 - 2	7440-65-5
W	1	7440-33-7
Lu	0 - 2	7439-94-3

IT 675819-84-8, Barium calcium strontium silicate ((Ba,Ca,Sr)2(SiO4))

RL: DEV (Device component use); USES (Uses)

(europium-activated; white light sources

using alkaline earth silicate phosphors and blends containing them)

RN 675819-84-8 HCAPLUS

CN Barium calcium strontium silicate ((Ba,Ca,Sr)2(SiO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	1	17181-37-2
Ca	0 - 2	7440-70-2
Ba	0 - 2	7440-39-3
Sr	0 - 2	7440-24-6

IT 11084-89-2, Strontium chloride silicate (Sr4Cl4Si3O8)

12535-38-5, Strontium yttrium sulfide (SrY2S4) 26775-37-5

76125-66-5, Aluminum strontium oxide (Al14Sr4O25)

82992-94-7, Calcium strontium sulfide ((Ca,Sr)S)

97258-83-3, Aluminum barium oxide (Al8BaO13) 144920-98-9

, Strontium borate metaphosphate oxide (Sr2(BO3)0.32(PO3)1.68O0.68)

675819-82-6, Aluminum barium calcium strontium oxide

(Al2(Ba,Ca,Sr)O4) 675819-85-9 675819-86-0

RL: DEV (Device component use); USES (Uses)

(europium-activated; white light sources

using alkaline earth silicate phosphors in blends containing)

RN 11084-89-2 HCAPLUS

CN Silicon strontium chloride oxide (Si3Sr4Cl4O8) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Cl	4	22537-15-1
O	8	17778-80-2
Sr	4	7440-24-6
Si	3	7440-21-3

RN 12535-38-5 HCAPLUS

CN Yttrate(1-), dithioxo-, strontium (2:1) (9CI) (CA INDEX NAME)

 $C = Y = S$ ● 1/2 Sr₂+

RN 20775-37-5 HCAPLUS

CN Silicic acid (H4SiO4), barium magnesium salt (2:3:1) (8CI, 9CI) (CA INDEX NAME)



● 3/2 Ba

● 1/2 Mg

RN 76125-60-5 HCAPLUS

CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	25	17778-80-2
Sr	4	7440-24-6
Al	14	7429-90-5

RN 82992-94-7 HCAPLUS

CN Calcium strontium sulfide ((Ca,Sr)S) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0 - 1	7440-70-2
Sr	0 - 1	7440-24-6

RN 97358-83-3 HCAPLUS

CN Aluminum barium oxide (Al8BaO13) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	13	17778-80-2
Ba	1	7440-39-3
Al	8	7429-90-5

RN 144920-98-9 HCAPLUS

CN Strontium borate metaphosphate oxide (Sr2(BO3)0.32(PO3)1.68O0.68) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.68	17778-80-2
O3P	1.68	15389-19-2
BO3	0.32	14213-97-9
Sr	2	7440-24-6

RN 675819-82-6 HCAPLUS

CN Aluminum barium calcium strontium oxide (Al₂(Ba,Ca,Sr)₄O₄) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	4	17778-80-2
Ca	0 - 1	7440-70-2
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	2	7429-90-5

RN 675819-85-9 HCAPLUS

CN Barium calcium magnesium strontium zinc silicate
((Ba,Ca,Mg,Sr,Zn)₂(Si₂O₇)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O7Si2	1	20617-83-8
Ca	0 - 2	7440-70-2
Zn	0 - 1	7440-66-6
Ba	0 - 2	7440-39-3
Sr	0 - 2	7440-24-6
Mg	0 - 1	7439-95-4

RN 675819-86-0 HCAPLUS

CN Aluminum barium calcium gallium indium strontium sulfide
(Al,Ga,In)₂(Ba,Ca,Sr)₅S₄ (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
In	0 - 2	7440-74-6
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	0 - 2	7429-90-5

IT 12159-91-0, Germanium magnesium fluoride oxide (GeMg₄F_{05.5})193361-69-2, Germanium magnesium fluoride oxide (GeMg₄F₀₆)

RL: DEV (Device component use); USES (Uses)

(manganese-activated; white light sources

using alkaline earth silicate phosphors in blends containing)

RN 12159-91-0 HCAPLUS

CN Germanium magnesium fluoride oxide (Ge₂Mg₈F₂₀₁₁) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	11	17778-80-2
F	2	14762-94-8
Ge	2	7440-56-4
Mg	8	7439-95-4

RN 193361-69-2 HCAPLUS

CN Germanium magnesium fluoride oxide (GeMg₄F₀₆) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	6	17778-80-2
F	1	14762-94-8
Ge	1	7440-56-4
Mg	4	7439-95-4

IT 7439-96-5, Manganese, uses 7439-98-7, Molybdenum, uses 7440-09-7, Potassium, uses 7440-27-9, Terbium, uses 7440-36-0, Antimony, uses 7440-45-1, Cerium, uses 7440-53-1, Europium, uses 7440-69-9, Bismuth, uses 16065-87-5, Molybdenum 6+, uses 16397-91-4, Manganese 2+, uses 16910-54-6, Europium 2+, uses 18923-26-7, Cerium 3+, uses 19768-23-3, Manganese 4+, uses 22541-18-0, Europium 3+, uses 22541-20-4, Terbium 3+, uses 23713-46-4, Bismuth 3+, uses 23713-48-6, Antimony 3+, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (phosphors activated with; white light sources using alkaline earth silicate phosphors and blends containing them)

RN 7439-96-5 HCAPLUS
 CN Manganese (CA INDEX NAME)

Mn

RN 7439-98-7 HCAPLUS
 CN Molybdenum (CA INDEX NAME)

Mo

RN 7440-09-7 HCAPLUS
 CN Potassium (CA INDEX NAME)

K

RN 7440-27-9 HCAPLUS
 CN Terbium (CA INDEX NAME)

Tb

RN 7440-36-0 HCAPLUS
 CN Antimony (CA INDEX NAME)

Sb

RN 7440-45-1 HCAPLUS
CN Cerium (CA INDEX NAME)

Ce

RN 7440-53-1 HCAPLUS
CN Europium (CA INDEX NAME)

Eu

RN 7440-69-9 HCAPLUS
CN Bismuth (CA INDEX NAME)

Bi

RN 16065-87-5 HCAPLUS
CN Molybdenum, ion (Mo6+) (CA INDEX NAME)

Mo6+

RN 16397-91-4 HCAPLUS
CN Manganese, ion (Mn2+) (CA INDEX NAME)

Mn2+

RN 16910-54-6 HCAPLUS
CN Europium, ion (Eu2+) (CA INDEX NAME)

Eu2+

RN 18923-26-7 HCAPLUS
CN Cerium, ion (Ce3+) (CA INDEX NAME)

Ce3+

RN 19768-33-3 HCAPLUS
CN Manganese, ion (Mn4+) (CA INDEX NAME)

Mn 4+

RN 22541-18-0 HCAPLUS
CN Europium, ion (Eu3+) (CA INDEX NAME)

Eu 3+

RN 22541-20-4 HCAPLUS
CN Terbium, ion (Tb3+) (CA INDEX NAME)

Tb 3+

RN 23713-46-4 HCAPLUS
CN Bismuth, ion (Bi3+) (CA INDEX NAME)

Bi 3+

RN 23713-48-6 HCAPLUS
CN Antimony, ion (Sb3+) (CA INDEX NAME)

Sb 3+

IT 864429-52-7, Barium europium strontium silicate
(Ba0.05Eu0.05Sr1.9(SiO4)) 864429-53-8, Calcium europium
strontium silicate (Ca0.72Eu0.12Sr1.16(SiO4))
RL: DEV (Device component use); USES (Uses)
(white light sources using alkaline earth
silicate phosphors and blends containing them)
RN 864429-52-7 HCAPLUS
CN Barium europium strontium silicate (Ba0.05Eu0.05Sr1.9(SiO4)) (CA INDEX
NAME)

Component	Ratio	Component Registry Number
O4Si	1	17181-37-2
Eu	0.05	7440-53-1
Ba	0.05	7440-39-3
Sr	1.9	7440-24-6

RN 864429-53-8 HCAPLUS
 CN Calcium europium strontium silicate (Ca0.72Eu0.12Sr1.16(SiO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	1	17181-37-2
Ca	0.72	7440-70-2
Eu	0.12	7440-53-1
Sr	1.16	7440-24-6

L88 ANSWER 5 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2005:979724 HCAPLUS [Full-text](#)

DN 143:275304

TI Rules for efficient light sources using phosphor converted LEDs

IN Setiur, Anant A.; Shiang, Joseph; Comanzo, Holly Ann; Becker, Charles A.; Duclos, Steven; Srivastava, Alok Mani; Weaver, Stanton; Soules, Thomas F.

PA Gelcore LLC, USA

SO PCT Int. Appl., 24 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005083036	A1	20050909	WO 2005-US6098	20050222 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	EP 1718715	A1	20061108	EP 2005-723805	20050222 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK, IS				
	CN 1954044	A	20070425	CN 2005-80008850	20050222 <--
	JP 2007527118	T	20070920	JP 2006-554331	20050222 <--
	US 20080135860	A1	20080612	US 2007-590262	20071129 <--
PRAI	US 2004-546595P	P	20040220	<--	
	WO 2005-US6098	W	20050222		
AB	An LED lamp including an LED and one or more phosphors, wherein for each phosphor, a figure of merit (FOM) defined as the product of (incident LED flux) x (excitation cross-section of the phosphor) x (phosphor material decay time) is less than 0.3. Such an arrangement provides a light emitting device with improved lumen output and color stability over a range of drive currents.				
IT	16397-91-4, Manganese(2+), properties 16910-54-6, Europium(2+), properties 18923-26-7, Cerium(3+), properties 19768-33-3, Manganese(4+), properties 22541-18-0, Europium(3+), properties 22541-20-4, Terbium(3+), properties 76125-60-5, Aluminum strontium oxide (Al14Sr4O25)				

RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
 (rules for efficient light sources using phosphor converted LEDs)

RN 16397-91-4 HCAPLUS
 CN Manganese, ion (Mn2+) (CA INDEX NAME)

Mn 2+

RN 16910-54-6 HCAPLUS
 CN Europium, ion (Eu2+) (CA INDEX NAME)

Eu 2+

RN 18923-26-7 HCAPLUS
 CN Cerium, ion (Ce3+) (CA INDEX NAME)

Ce 3+

RN 19768-33-3 HCAPLUS
 CN Manganese, ion (Mn4+) (CA INDEX NAME)

Mn 4+

RN 22541-18-0 HCAPLUS
 CN Europium, ion (Eu3+) (CA INDEX NAME)

Eu 3+

RN 22541-20-4 HCAPLUS
 CN Terbium, ion (Tb3+) (CA INDEX NAME)

Tb 3+

RN 76125-60-5 HCAPLUS
 CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number

=====+=====+=====

O		25		17778-80-2
Sr		4		7440-24-6
Al		14		7429-90-5

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Mani, S	2003			US 2003067008 A1	HCAPLUS
Mani, S	2003			US 2003146411 A1	

L88 ANSWER 6 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2005:874397 HCAPLUS Full-text

DN 143:238355

TI Improved europium-activated phosphors containing oxides of rare-earth and group III metals

IN Comanzo, Holly Ann; Setiur, Anant Achyut;
Srivastava, Alok Mani

PA General Electric Company, USA

SO Brit. UK Pat. Appl., 19 pp.

CODEN: BAXXDU

DT Patent

LA English

FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	GB 2411176	A	20050824	GB 2004-27015	20041209 <--
	US 20050279969	A1	20051222	US 2004-779086	20040217 <--
	US 7022263	B2	20060404		
PRAI	US 2004-779086	A	20040217	<--	
	US 2002-64121	A2	20020612	<--	

AB The invention refers to Eu-activated phosphors comprising oxides of at least a rare-earth metal selected from the group consisting of Gd, Y, La, and combinations thereof and at least a Group-IIIB metal selected from the group consisting of Al, Ga, In, and combinations thereof, and a method for making such phosphors comprising adding at least a halide of at least one of the selected Group-IIIB metals in a starting mixture. The method further comprises firing the starting mixture in an O-containing atmospheric. The phosphors produced by such a method exhibit improved absorption in the UV wavelength range and improved quantum efficiency. Also shown is a phosphor blend comprising the above Eu-activated phosphor and a light source comprising the phosphor blend.

IT 76125-60-5, Aluminum strontium oxide (Al14Sr4025)

RL: DEV (Device component use); USES (Uses)

(improved europium-activated phosphors containing oxides of rare-earth and group III metals)

RN 76125-60-5 HCAPLUS

CN Aluminum strontium oxide (Al14Sr4025) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	25	17778-80-2
Sr	4	7440-24-6
Al	14	7429-90-5

IT 16910-54-6, Europium 2+, uses 18923-26-7, Cerium 3+,
uses 22541-18-0, Europium 3+, uses 22541-20-4, Terbium
3+, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES

(Uses)

(improved europium-activated phosphors containing oxides of rare-earth and group III metals)

RN 16910-54-6 HCAPLUS

CN Europium, ion (Eu2+) (CA INDEX NAME)

Eu2+

RN 18923-26-7 HCAPLUS

CN Cerium, ion (Ce3+) (CA INDEX NAME)

Ce3+

RN 22541-18-0 HCAPLUS

CN Europium, ion (Eu3+) (CA INDEX NAME)

Eu3+

RN 22541-20-4 HCAPLUS

CN Terbium, ion (Tb3+) (CA INDEX NAME)

Tb3+

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon				IGB 1132182 A	
Anon				IGB 2405408 A	HCAPLUS
Anon				JJP 570010678 A	
Anon				JJP 570180687 A	
Anon				JJP 610012785 A	

L88 ANSWER 7 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2005:638464 HCAPLUS Full-text

DN 143:142366

TI Phosphors containing boron and rare-earth metals, and light sources incorporating the same

IN Manivannan, Venkatesan; Srivastava, Alok Mani; Comanzo, Holly Ann

PA General Electric Company, USA

SO U.S. Pat. Appl. Publ., 10 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

PATENT NO.

KIND

DATE

APPLICATION NO.

DATE

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PI  US 20050156503      A1  20050721      US 2004-762604      20040121 <--
    US 7056451          B2  20060606
    GB 2410956          A   20050817      GB 2005-790          20050114 <--
    JP 2005206841      A   20050804      JP 2005-12206        20050120 <--
PRAI US 2004-762604      A   20040121 <--

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AB Phosphors are described by the general formula AB306:Ce,Mn (A = ≥ 1 rare earth other than Ce). Phosphor blends are described which comprise the phosphors in combination with a red-emitting phosphor and a blue-emitting phosphor, and optionally, a green-emitting phosphor. Light sources (e.g., mercury discharge lamps) and displays (e.g., cathode-ray tubes) employing the phosphors are also described. Methods for preparing the phosphors are described which entail forming a mixture of O-containing precursors and firing the mixture in a reducing atmospheric at 900-1300° for a time sufficient to convert the mixture to the phosphor. Methods are also described in which a precursor is formed by copptn. followed by firing in an O-containing atmospheric

IT 473908-57-5

RL: TEM (Technical or engineered material use); USES (Uses)

(europium-activated; rare earth borate phosphors and their preparation and blends containing them and light sources and displays employing them)

RN 473908-57-5 HCAPLUS

CN Aluminum barium calcium magnesium strontium oxide (Al10(Ba,Ca,Sr)MgO17)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	17	17778-80-2
Ca	0 - 1	7440-70-2
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Mg	1	7439-95-4
Al	10	7429-90-5

IT 7440-53-1, Europium, uses 16910-54-6, Europium 2+, uses

22541-18-0, Europium 3+, uses

RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)

(phosphors activated with; rare earth borate phosphors in blends containing)

RN 7440-53-1 HCAPLUS

CN Europium (CA INDEX NAME)

Eu

RN 16910-54-6 HCAPLUS

CN Europium, ion (Eu2+) (CA INDEX NAME)

Eu 2+

RN 22541-18-0 HCAPLUS

CN Europium, ion (Eu3+) (CA INDEX NAME)

Eu 3+

IT 7439-96-5P, Manganese, uses 7440-45-1P, Cerium, uses
 RL: DEV (Device component use); IMF (Industrial manufacture); MOA
 (Modifier or additive use); PREP (Preparation); USES (Uses)
 (rare earth borate phosphors and their preparation and blends
 containing them and light sources and displays
 employing them)
 RN 7439-96-5 HCAPLUS
 CN Manganese (CA INDEX NAME)

Mn

RN 7440-45-1 HCAPLUS
 CN Cerium (CA INDEX NAME)

Ce

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	1981			JP 56041292A	
Anon	2001			EP 1073089	HCAPLUS
Changchun	1999			CN 1233642A	
de Hair	1987			US 4644223 A	
Deboer	1992			US 5132043 A	HCAPLUS
Looye	1982			US 4319161 A	HCAPLUS
Peters	1984	131	1290	Jour. of Luminescence	
Ranby	1984			US 4446048 A	HCAPLUS
Shionoya	1999		389	Phosphor Handbook	

L88 ANSWER 8 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2005:394061 HCAPLUS Full-text

DN 142:419777

TI Semiconductor light emitting devices
 with enhanced luminous efficiency

IN Steigerwald, Daniel A.; Collins, William D.; Fletcher, Robert M.;
 Ludowise, Michael J.; Posselt, Jason L.

PA Lumileds Lighting U.S., Llc, USA

SO Eur. Pat. Appl., 10 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1528604	A2	20050504	EP 2004-105190	20041020 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR				
US 20050093007	A1	20050505	US 2003-699433	20031031 <--

US 6933535 B2 20050823
 JP 2005136420 A 20050526 JP 2004-314113 20041028 <--
 PRAI US 2003-699433 A 20031031 <--
 AB A structure includes semiconductor light emitting device and a wavelength-converting layer. The wavelength-converting layer converts a portion of the light emitted from the semiconductor light emitting device. The dominant wavelength of the combined light from the semiconductor light emitting device and the wavelength-converting layer is essentially the same as the wavelength of light emitted from the device. The wavelength-converting layer may emit light having a spectral luminous efficacy greater than the spectral luminous efficiency of the light emitted from the device. Thus, the structure has a higher luminous efficiency than a device without a wavelength-converting layer.
 IT 7439-96-5, Manganese, properties 7440-45-1, Cerium, properties 7440-53-1, Europium, properties
 RL: CPS (Chemical process); DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
 (semiconductor light emitting devices with enhanced luminous efficiency)
 RN 7439-96-5 HCAPLUS
 CN Manganese (CA INDEX NAME)

Mn

RN 7440-45-1 HCAPLUS
 CN Cerium (CA INDEX NAME)

Ce

RN 7440-53-1 HCAPLUS
 CN Europium (CA INDEX NAME)

Eu

IT 92992-94-7, Calcium strontium sulfide ((Ca,Sr)S)
 127575-65-9, Aluminum gallium indium nitride
 RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
 (semiconductor light emitting devices with enhanced luminous efficiency)
 RN 82992-94-7 HCAPLUS
 CN Calcium strontium sulfide ((Ca,Sr)S) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0 - 1	7440-70-2
Sr	0 - 1	7440-24-6

RN 127575-65-9 HCAPLUS
 CN Aluminum gallium indium nitride ((Al,Ga,In)N) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
In	0 - 1	7440-74-6
Ga	0 - 1	7440-55-3
Al	0 - 1	7429-90-5

L88 ANSWER 9 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2005:283741 HCAPLUS Full-text

DN 142:363441

TI Light-emitting device

IN Takashima, Suguru; Kameshima, Masatoshi; Tamaki, Hiroto; Takeichi, Junji;
 Murazaki, Yoshinori; Kinoshita, Shinpei

PA Nichia Corporation, Japan

SO PCT Int. Appl., 122 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005029596	A1	20050331	WO 2004-JP13649	20040917 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GR, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	JP 2005340748	A	20051208	JP 2004-271802	20040917 <--
	EP 1670070	A1	20060614	EP 2004-773281	20040917 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				
	CN 1883057	A	20061220	CN 2004-80034092	20040917 <--
PRAI	JP 2003-326535	A	20030918	<--	
	JP 2003-328367	A	20030919	<--	
	JP 2004-133626	A	20040428		
	WO 2004-JP13649	W	20040917		
AB	Disclosed is a light-emitting device comprising a light-emitting element which emits lights having a main emission peak wavelength in a range from near UV region to visible region and phosphors. The light-emitting device comprises two or more kinds of phosphors which either have luminescent centers of direct transition type or are directly excited by the light-emitting element.				
IT	7440-45-1, Cerium, properties 7440-53-1, Europium, properties				
	RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); USES (Uses)				
	(light-emitting device)				
RN	7440-45-1 HCAPLUS				
CN	Cerium (CA INDEX NAME)				

Ce

RN 7440-53-1 HCAPLUS
 CN Europium (CA INDEX NAME)

Eu

IT 76125-60-5, Strontium aluminate (SrAl14O25) 675819-84-3
 , Barium calcium strontium silicate ((Ba,Ca,Sr)2(SiO4))
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (light-emitting device)
 RN 76125-60-5 HCAPLUS
 CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	25	17778-80-2
Sr	4	7440-24-6
Al	14	7429-90-5

RN 675819-84-8 HCAPLUS
 CN Barium calcium strontium silicate ((Ba,Ca,Sr)2(SiO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	1	17181-37-2
Ca	0 - 2	7440-70-2
Ba	0 - 2	7440-39-3
Sr	0 - 2	7440-24-6

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Agilent Technologies In	2000			IEP 1339109 A2	HCAPLUS
Agilent Technologies In	2000			JP 2000244021 A	HCAPLUS
Lumileds Lighting U S L	2003			IEP 1248304 A2	HCAPLUS
Lumileds Lighting U S L	2003			JP 200334791 A	
Lumileds Lighting U S L	2003			US 6417019 B1	HCAPLUS
Nichia Chemical Industr	2002			IEP 1394864 A1	HCAPLUS
Nichia Chemical Industr	2002			IWO 2002086978 A1	
Nichia Chemical Industr	2002			JP 2002359404 A	HCAPLUS
Osram Opto Semiconducto	2003			IWO 2001040403 A1	HCAPLUS
Osram Opto Semiconducto	2003			JP 2003515655 A	
Sharp Corp	2001			JP 2001236034 A	HCAPLUS
Sharp Corp	2001			JP 2001332394 A	HCAPLUS
Sharp Corp	2001			US 2002018053 A1	
Sony Corp	2001			JP 2001111114 A	HCAPLUS
Toyoda Gosei Co Ltd	2002			IEP 1347517 A1	HCAPLUS
Toyoda Gosei Co Ltd	2002			IWO 2002054503 A1	

L88 ANSWER 10 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN
 AN 2005:172436 HCAPLUS Full-text
 DN 142:268880
 TI Phosphor blends for high-CRI fluorescent lamps
 IN Setlur, Anant Achyut; Srivastava, Alok Mani;
 Comanzo, Holly Ann; Mannivannan, Venkatesan; Beers, William
 Winder; Toth, Katalin; Balazs, Laszlo
 PA General Electric Company, USA
 SO Brit. UK Pat. Appl., 41 pp.
 CODEN: BAXXDU
 DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	GB 2405409	A	20050302	GB 2003-20318	20030829 <--
	DE 10339839	A1	20050324	DE 2003-10339839	20030829 <--
	JP 2005075867	A	20050324	JP 2003-305612	20030829 <--
PRAI	GB 2003-20318	A	20030829	<--	

AB A phosphor blend comprises at least two phosphors each selected from one of the groups of phosphors that absorb UV electromagnetic radiation and emit in a region of visible light. The phosphor blend can be applied to a discharge gas radiation source to produce light sources having high color rendering index. A phosphor blend is advantageously includes the phosphor (Tb,Y,Lu,La,Gd), wherein x is in the range from .apprx.2.8 to and including 3 and y is in the range from .apprx.4 to and including 5.

IT 12159-91-0, Germanium magnesium fluoride oxide GeMg4FO5.5
 76125-60-5, Aluminum strontium oxide (Al14Sr4O25)
 473908-57-5

RL: DEV (Device component use); USES (Uses)
 (phosphor blends for high color rendering index fluorescent lamps)

RN 12159-91-0 HCAPLUS

CN Germanium magnesium fluoride oxide (Ge2Mg8F2011) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	11	17778-80-2
F	2	14762-94-8
Ge	2	7440-56-4
Mg	8	7439-95-4

RN 76125-60-5 HCAPLUS

CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	25	17778-80-2
Sr	4	7440-24-6
Al	14	7429-90-5

RN 473908-57-5 HCAPLUS

CN Aluminum barium calcium magnesium strontium oxide (Al10(Ba,Ca,Sr)MgO17)
 (CA INDEX NAME)

Component	Ratio	Component
		Registry Number

O	17	17778-80-2
Ca	0 - 1	7440-70-2
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Mg	1	7439-95-4
Al	10	7429-90-5

IT 16397-91-4, Manganese 2+, uses 16910-54-6, Europium 2+,
 uses 18923-26-7, Cerium 3+, uses 22541-18-0, Europium
 3+, uses 22541-20-4, Terbium 3+, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES
 (Uses)

(phosphor blends for high color rendering index fluorescent
 lamps)

RN 16397-91-4 HCAPLUS

CN Manganese, ion (Mn2+) (CA INDEX NAME)

Mn2+

RN 16910-54-6 HCAPLUS

CN Europium, ion (Eu2+) (CA INDEX NAME)

Eu2+

RN 18923-26-7 HCAPLUS

CN Cerium, ion (Ce3+) (CA INDEX NAME)

Ce3+

RN 22541-18-0 HCAPLUS

CN Europium, ion (Eu3+) (CA INDEX NAME)

Eu3+

RN 22541-20-4 HCAPLUS

CN Terbium, ion (Tb3+) (CA INDEX NAME)

Tb3+

RETABLE

Referenced Author	Year	VOL	PG	Referenced Work	Referenced
(RAU)	(RPY)	(RVL)	(RPG)	(RWK)	File

Duro-Test				US 5122710 A	HCAPLUS
Flowil				EP 0594424 A1	HCAPLUS
General Electric				WO 0189001 A2	HCAPLUS
General Electric				EP 1339093 A2	HCAPLUS
General Electric				US 20020158565 A1	HCAPLUS
General Electric				US 20030067008 A1	
Gte Products				US 6137217 A	HCAPLUS
Matsushita				US 6187225 B1	HCAPLUS
Philips				US 5612590 A	HCAPLUS

L88 ANSWER 11 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2005:122520 HCAPLUS Full-text

DN 142:228239

TI Deep red phosphor comprising (Ba,Sr,Ca)3Mg1-2Si2O8:Eu2+ and white
-emitting phosphor blends and light-
emitting devices employing the red phosphor

IN Setlur, Anant Achyut; Srivastava, Alok Mani;
Comanzo, Holly Ann

PA General Electric Company, USA

SO U.S. Pat. Appl. Publ., 15 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20050029927	A1	20050210	US 2003-636016	20030807 <--
	US 7026755	B2	20060411		
	WO 2005017066	A1	20050224	WO 2004-US21805	20040708 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				

PRAI US 2003-636016 A 20030807 <--

AB White-light-emitting devices are described which include a UV semiconductor light source and a phosphor blend including a blue emitting phosphor, a green emitting phosphor and a deep red emitting phosphor comprising (Ba,Sr,Ca)3MgxSi2O8:Eu2+, where 1≤x≤2. Also disclosed is a phosphor blend comprising a blue emitting phosphor, a green emitting phosphor and a red emitting phosphor comprising (Ba,Sr,Ca)3MgxSi2O8:Eu2+.

IT 127575-65-9, Aluminum gallium indium nitride

RL: DEV (Device component use); USES (Uses)
(LED; deep red phosphor comprising (Ba,Sr,Ca)3Mg1-2Si2O8:Eu2+
and white-emitting phosphor blends and
light-emitting devices employing the red
phosphor)

RN 127575-65-9 HCAPLUS

CN Aluminum gallium indium nitride ((Al,Ga,In)N) (CA INDEX NAME)

Component		Ratio		Component
				Registry Number

=====+=====

N		1		17778-88-0
In		0 - 1		7440-74-6
Ga		0 - 1		7440-55-3
Al		0 - 1		7429-90-5

IT 7439-98-7, Molybdenum, uses 7440-09-7, Potassium, uses 7440-27-9, Terbium, uses 7440-36-0, Antimony, uses 7440-45-1, Cerium, uses 7440-69-9, Bismuth, uses RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (dopant; deep red phosphor comprising (Ba,Sr,Ca)3Mg1-2Si2O8:Eu2+ and white-emitting phosphor blends and light-emitting devices employing the red phosphor)

RN 7439-98-7 HCAPLUS
 CN Molybdenum (CA INDEX NAME)

Mo

RN 7440-09-7 HCAPLUS
 CN Potassium (CA INDEX NAME)

K

RN 7440-27-9 HCAPLUS
 CN Terbium (CA INDEX NAME)

Tb

RN 7440-36-0 HCAPLUS
 CN Antimony (CA INDEX NAME)

Sb

RN 7440-45-1 HCAPLUS
 CN Cerium (CA INDEX NAME)

Ce

RN 7440-69-9 HCAPLUS
 CN Bismuth (CA INDEX NAME)

Bi

IT 7439-96-5, Manganese, properties 7440-53-1, Europium, properties
 RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (dopant; deep red phosphor comprising (Ba,Sr,Ca)3Mg1-2Si2O8:Eu2+ and white-emitting phosphor blends and light-emitting devices employing the red phosphor)
 RN 7439-96-5 HCAPLUS
 CN Manganese (CA INDEX NAME)

Mn

RN 7440-53-1 HCAPLUS
 CN Europium (CA INDEX NAME)

Eu

IT 12159-91-0, Germanium magnesium fluoride oxide (Ge2Mg8F2O11)
 12525-03-0, Calcium lanthanum sulfide (CaLa2S4) 12535-38-5
 , Strontium yttrium sulfide (SrY2S4) 20775-37-5, Barium
 magnesium silicate (Ba3MgSi2O8) 76125-60-5, Aluminum strontium
 oxide (Al14Sr4O25) 82992-94-7, Calcium strontium sulfide
 ((Ca,Sr)S) 97358-83-3, Aluminum barium oxide (Al8BaO13)
 173525-28-5 223757-06-0, Gadolinium sodium borate oxide
 (Gd2Na2(BO3)2O) 473908-57-5 675819-82-6, Aluminum
 barium calcium strontium oxide (Al2(Ba,Ca,Sr)O4) 675819-83-7
 675819-84-8, Barium calcium strontium silicate ((Ba,Ca,Sr)2(SiO4))
 675819-86-0 675819-90-6 675819-91-7
 841303-43-3 841303-44-4 841303-45-5, Calcium
 strontium borate phosphate ((Ca,Sr)10(BO2)2(PO4)6) 841303-46-6
 841303-47-7, Lutetium tungsten yttrium oxide ((Lu,Y)2WO6)
 841303-50-2 841303-51-3
 RL: DEV (Device component use); USES (Uses)
 (doped phosphor; deep red phosphor comprising (Ba,Sr,Ca)3Mg1-2Si2O8:Eu2+ and white-emitting phosphor blends and light-emitting devices employing the red phosphor)
 RN 12159-91-0 HCAPLUS
 CN Germanium magnesium fluoride oxide (Ge2Mg8F2O11) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	11	17778-80-2
F	2	14762-94-8
Ge	2	7440-56-4
Mg	8	7439-95-4

RN 12525-03-0 HCAPLUS

CN Calcium lanthanum sulfide (CaLa2S4) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
S	4	7704-34-9
Ca	1	7440-70-2
La	2	7439-91-0

RN 12535-38-5 HCAPLUS

CN Yttrate(1-), dithioxo-, strontium (2:1) (9CI) (CA INDEX NAME)



RN 20775-37-5 HCAPLUS

CN Silicic acid (H4SiO4), barium magnesium salt (2:3:1) (8CI, 9CI) (CA INDEX NAME)



RN 76125-60-5 HCAPLUS

CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	25	17778-80-2
Sr	4	7440-24-6
Al	14	7429-90-5

RN 82992-94-7 HCAPLUS

CN Calcium strontium sulfide ((Ca,Sr)S) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
S	1	7704-34-9
Ca	0 - 1	7440-70-2
Sr	0 - 1	7440-24-6

RN 97358-83-3 HCAPLUS

CN Aluminum barium oxide (Al8BaO13) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	13	17778-80-2
Ba	1	7440-39-3
Al	8	7429-90-5

RN 173525-28-5 HCAPLUS

CN Gadolinium lanthanum lutetium yttrium oxide sulfide ((Gd,Lu,Y)2O2S)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
S	1	7704-34-9
Y	0 - 2	7440-65-5
Gd	0 - 2	7440-54-2
Lu	0 - 2	7439-94-3
La	0 - 2	7439-91-0

RN 223757-06-0 HCAPLUS

CN Gadolinium sodium borate oxide (Gd2Na2(BO3)2O) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
BO3	2	14213-97-9
Gd	2	7440-54-2
Na	2	7440-23-5

RN 473908-57-5 HCAPLUS

CN Aluminum barium calcium magnesium strontium oxide (Al10(Ba,Ca,Sr)MgO17)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	17	17778-80-2
Ca	0 - 1	7440-70-2
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Mg	1	7439-95-4
Al	10	7429-90-5

RN 675819-82-6 HCAPLUS

CN Aluminum barium calcium strontium oxide (Al2(Ba,Ca,Sr)O4) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	4	17778-80-2
Ca	0 - 1	7440-70-2
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	2	7429-90-5

RN 675819-83-7 HCAPLUS

CN Gadolinium lanthanum lutetium scandium yttrium borate
((Gd,La,Lu,Sc,Y)(BO3)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
BO3	1	14213-97-9
Y	0 - 1	7440-65-5
Gd	0 - 1	7440-54-2
Sc	0 - 1	7440-20-2
Lu	0 - 1	7439-94-3
La	0 - 1	7439-91-0

RN 675819-84-8 HCAPLUS

CN Barium calcium strontium silicate ((Ba,Ca,Sr)2(SiO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	1	17181-37-2
Ca	0 - 2	7440-70-2
Ba	0 - 2	7440-39-3
Sr	0 - 2	7440-24-6

RN 675819-86-0 HCAPLUS

CN Aluminum barium calcium gallium indium strontium sulfide
((Al,Ga,In)2(Ba,Ca,Sr)S4) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
In	0 - 2	7440-74-6
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	0 - 2	7429-90-5

RN 675819-90-6 HCAPLUS

CN Gadolinium lanthanum lutetium yttrium oxide ((Gd,La,Lu,Y)2O3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Y	0 - 2	7440-65-5
Gd	0 - 2	7440-54-2
Lu	0 - 2	7439-94-3
La	0 - 2	7439-91-0

RN 675819-91-7 HCAPLUS

CN Gadolinium lanthanum lutetium vanadium yttrium oxide ((Gd,La,Lu,Y)VO4)
(CA INDEX NAME)

Component	Ratio	Component Registry Number

O		4		17778-80-2
Y		0 - 1		7440-65-5
V		1		7440-62-2
Gd		0 - 1		7440-54-2
Lu		0 - 1		7439-94-3
La		0 - 1		7439-91-0

RN 841303-43-3 HCAPLUS

CN Barium calcium strontium bromide chloride fluoride hydroxide phosphate
([Ba,Ca,Sr,Br,Cl,F,(OH)]5(PO4)3) (CA INDEX NAME)

Component		Ratio		Component Registry Number
Cl		0 - 1		22537-15-1
F		0 - 1		14762-94-8
HO		0 - 1		14280-30-9
O4P		3		14265-44-2
Br		0 - 1		10097-32-2
Ca		0 - 5		7440-70-2
Ba		0 - 5		7440-39-3
Sr		0 - 5		7440-24-6

RN 841303-44-4 HCAPLUS

CN Barium calcium strontium borate metaphosphate ((Ba,Ca,Sr)(BO2)(PO3)) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O3P		1		15389-19-2
BO2		1		14100-65-3
Ca		0 - 1		7440-70-2
Ba		0 - 1		7440-39-3
Sr		0 - 1		7440-24-6

RN 841303-45-5 HCAPLUS

CN Calcium strontium borate phosphate ((Ca,Sr)10(BO2)2(PO4)6) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O4P		6		14265-44-2
BO2		2		14100-65-3
Ca		0 - 10		7440-70-2
Sr		0 - 10		7440-24-6

RN 841303-46-6 HCAPLUS

CN Barium calcium magnesium strontium metaphosphate oxide
((Ba,Ca,Sr)Mg(PO3)2O) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		1		17778-80-2
O3P		2		15389-19-2
Ca		0 - 1		7440-70-2
Ba		0 - 1		7440-39-3
Sr		0 - 1		7440-24-6

Mg | 1 | 7439-95-4

RN 841303-47-7 HCAPLUS

CN Lutetium tungsten yttrium oxide ((Lu,Y)2WO6) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	6	17778-80-2
Y	0 - 2	7440-65-5
W	1	7440-33-7
Lu	0 - 2	7439-94-3

RN 841303-50-2 HCAPLUS

CN Calcium magnesium strontium zinc chloride silicate
((Ca,Mg,Sr,Zn)8Cl2(SiO4)4) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Cl	2	22537-15-1
O4Si	4	17181-37-2
Ca	0 - 8	7440-70-2
Zn	0 - 1	7440-66-6
Sr	0 - 8	7440-24-6
Mg	0 - 1	7439-95-4

RN 841303-51-3 HCAPLUS

CN Barium calcium magnesium strontium zinc borate ((Ba,Sr)2(Ca,Mg,Zn)(BO3)2)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
BO3	2	14213-97-9
Ca	0 - 1	7440-70-2
Zn	0 - 1	7440-66-6
Ba	0 - 2	7440-39-3
Sr	0 - 2	7440-24-6
Mg	0 - 1	7439-95-4

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	2001			IWO 0189001 A2	HCAPLUS
Anon	2002			IWO 0211214 A1	HCAPLUS
Anon	2002			EP 1193306 A2	HCAPLUS
Bokor	2004			US 20040056256 A1	
Danielson	2001			US 6203726 B1	HCAPLUS
Danielson	2005			US 6850002 B1	HCAPLUS
Doughty	1998			US 5851063 A	
Duggal	2001			US 6294800 B1	HCAPLUS
Duggal	2003			US 6515314 B1	HCAPLUS
Duggal	2003			US 6538371 B1	HCAPLUS
Ellens	2003			US 6504179 B1	HCAPLUS
Ellens	2003			US 6552487 B1	HCAPLUS
Furukawa	2003			US 6576931 B1	HCAPLUS
Greci	2002			US 6366033 B1	HCAPLUS
Hanamoto	2002			US 20020063301 A1	HCAPLUS

Hhn	2000		US 6066861 A	HCAPLUS
Hhn	2003		US 6592780 B1	HCAPLUS
ivastava	2001		US 6210605 B1	HCAPLUS
ivastava	2001		US 6255670 B1	HCAPLUS
ivastava	2001		US 6278135 B1	HCAPLUS
ivastava	2002		US 6402987 B1	HCAPLUS
ivastava	2003		US 6522065 B1	HCAPLUS
ivastava	2003		US 6555958 B1	HCAPLUS
ivastava	2003		US 6596195 B1	HCAPLUS
Jstel	2000		US 6084250 A	HCAPLUS
Juestel	2002		US 20020105266 A1	
Kim, J	2004 43	1989	Japanese Journal of	HCAPLUS
Komoto	2002		US 6340824 B1	HCAPLUS
Lowery	2002		US 6351069 B1	HCAPLUS
Marshall	2003		US 6513949 B1	HCAPLUS
McFarland	2000		US 6013199 A	HCAPLUS
Odaki	2003		US 6521915 B1	HCAPLUS
Oshio	2000		US 6096243 A	HCAPLUS
Pappalardo	2000		US 6137217 A	HCAPLUS
Shimizu	1999		US 5998925 A	HCAPLUS
Shimizu	2000		US 6069440 A	HCAPLUS
Soules	2001		US 6252254 B1	HCAPLUS
Soules	2003		US 6580097 B1	HCAPLUS
Yocom	2000		US 6099754 A	HCAPLUS

L88 ANSWER 12 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2004:1058017 HCAPLUS Full-text

DN 142:13516

TI Luminescence conversion LED

PA Patent-Treuhand-Gesellschaft fuer Elektrische Gluehlampen MbH, Germany;
OSRAM Opto Semiconductors GmbH

SO Ger. Gebrauchsmusterschrift, 4 pp.

CODEN: GGXXFR

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	-----	-----	-----
PI	DE 20023554	U1	20041209	DE 2000-20023554	20000728 <--
PRAI	DE 2000-20023554		20000728	<--	

AB Luminescence conversion light-emitting devices (LEDs) for which the primary emission is in the 370-430 nm range are described which employ selected phosphors to convert the primary emission into longer wavelength visible radiation. Preferably, the LED is a Ga(In,Al)N-based LED.

IT 76125-60-5, Strontium aluminate (Sr4Al14O25)

RL: DEV (Device component use); USES (Uses)
(europium-doped; luminescence conversion light-emitting devices)

RN 76125-60-5 HCAPLUS

CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	25	17778-80-2
Sr	4	7440-24-6
Al	14	7429-90-5

IT 127575-65-9, Aluminum gallium indium nitride ((Al,Ga,In)N)

RL: DEV (Device component use); USES (Uses)

(luminescence conversion light-emitting
devices)

RN 127575-65-9 HCAPLUS

CN Aluminum gallium indium nitride ((Al,Ga,In)N) (CA INDEX NAME)

Component	Ratio	Component Registry Number
===== ===== =====		
N	1	17778-88-0
In	0 - 1	7440-74-6
Ga	0 - 1	7440-55-3
Al	0 - 1	7429-90-5

IT 7439-96-5, Manganese, uses 7440-27-9, Terbium, uses
7440-45-1, Cerium, uses 7440-69-9, Bismuth, uses
16397-91-4, Manganese 2+, uses 19923-26-7, Cerium 3+,
uses 19768-33-3, Manganese 4+, uses 22541-20-4,
Terbium 3+, uses 23713-46-4, Bismuth 3+, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)

(luminescence conversion light-emitting
devices)

RN 7439-96-5 HCAPLUS

CN Manganese (CA INDEX NAME)

Mn

RN 7440-27-9 HCAPLUS

CN Terbium (CA INDEX NAME)

Tb

RN 7440-45-1 HCAPLUS

CN Cerium (CA INDEX NAME)

Ce

RN 7440-69-9 HCAPLUS

CN Bismuth (CA INDEX NAME)

Bi

RN 16397-91-4 HCAPLUS

CN Manganese, ion (Mn2+) (CA INDEX NAME)

Mn 2+

RN 18923-26-7 HCAPLUS
CN Cerium, ion (Ce3+) (CA INDEX NAME)

Ce 3+

RN 19768-33-3 HCAPLUS
CN Manganese, ion (Mn4+) (CA INDEX NAME)

Mn 4+

RN 22541-20-4 HCAPLUS
CN Terbium, ion (Tb3+) (CA INDEX NAME)

Tb 3+

RN 23713-46-4 HCAPLUS
CN Bismuth, ion (Bi3+) (CA INDEX NAME)

Bi 3+

IT 7440-53-1, Europium, uses 16910-54-6, Europium 2+, uses
22541-18-0, Europium 3+, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)
(phosphors doped with; luminescence conversion light-
emitting devices)
RN 7440-53-1 HCAPLUS
CN Europium (CA INDEX NAME)

Eu

RN 16910-54-6 HCAPLUS
CN Europium, ion (Eu2+) (CA INDEX NAME)

Eu 2+

RN 22541-18-0 HCAPLUS

CN Europium, ion (Eu3+) (CA INDEX NAME)

Eu3+

L88 ANSWER 13 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN
 AN 2004:1036338 HCAPLUS Full-text
 DN 142:29603
 TI Boron-containing red light-emitting phosphors and light
 sources incorporating the phosphors
 IN Srivastava, Alok Mani; Comanzo, Holly Ann; Manivannan,
 Venkatesan
 PA General Electric Company, USA
 SO U.S. Pat. Appl. Publ., 11 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20040239233	A1	20041202	US 2003-448151	20030529 <--
	US 7019452	B2	20060328		
PRAI	US 2003-448151		20030529	<--	
AB	Boron-containing phosphors are described which comprise a material having a formula of $AD_1-xEu_xB_9O_{16}$, where A is an element selected from the group consisting of Ba, Sr, Ca, Mg, and their combinations; D is at least an element selected from the group consisting of rare-rare-earth metal selected from the group consisting of Y, Ce, Pr, Nd, Sm, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu; and x is in the range from ≈ 0.005 to ≈ 0.5 . The phosphor is used in a blend with other phosphors in a light source for generating visible light with a high color rendering index.				
IT	7440-27-9D, Terbium, borates 7440-45-1D, Cerium, borates RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses) (boron-containing red light-emitting phosphors prepared using)				
RN	7440-27-9 HCAPLUS				
CN	Terbium (CA INDEX NAME)				

Tb

RN 7440-45-1 HCAPLUS
 CN Cerium (CA INDEX NAME)

Ce

IT 7440-53-1, Europium, properties
 RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (dopant; boron-containing red light-emitting phosphors and light sources incorporating blends of

phosphors)

RN 7440-53-1 HCAPLUS

CN Europium (CA INDEX NAME)

Eu

IT 7439-96-5, Manganese, uses 7440-36-0, Antimony, uses
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material
 use); USES (Uses)
 (dopant; boron-containing red light-emitting phosphors and
 light sources incorporating blends of
 phosphors)

RN 7439-96-5 HCAPLUS

CN Manganese (CA INDEX NAME)

Mn

RN 7440-36-0 HCAPLUS

CN Antimony (CA INDEX NAME)

Sb

IT 76125-60-5, Aluminum strontium oxide (Al14Sr4O25)
 97358-83-3, Aluminum barium oxide (Al8BaO13)
 RL: DEV (Device component use); TEM (Technical or engineered material
 use); USES (Uses)
 (europium-doped phosphor; boron-containing red light-emitting
 phosphors and light sources incorporating
 blends of phosphors)

RN 76125-60-5 HCAPLUS

CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	25	17778-80-2
Sr	4	7440-24-6
Al	14	7429-90-5

RN 97358-83-3 HCAPLUS

CN Aluminum barium oxide (Al8BaO13) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	13	17778-80-2
Ba	1	7440-39-3
Al	8	7429-90-5

IT 7440-27-9, Terbium, properties 7440-45-1, Cerium,
 properties

RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses) (lanthanum phosphate doped with; boron-containing red light -emitting phosphors and light sources incorporating blends of phosphors)

RN 7440-27-9 HCAPLUS
CN Terbium (CA INDEX NAME)

Tb

RN 7440-45-1 HCAPLUS
CN Cerium (CA INDEX NAME)

Ce

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
de Vrieze	1991			US 5068568 A	HCAPLUS
Fouassier	1990			US 4946621 A	HCAPLUS
Hunt	1998			US 5714836 A	HCAPLUS
Shionoya, S	1999		389	Phosphor Handbook	
Takano	1983			US 4406971 A	
Zachau	2000			US 6045721 A	HCAPLUS

L88 ANSWER 14 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2004:995609 HCAPLUS Full-text

DN 141:417585

TI Light emitting device having silicate
fluorescent phosphor

IN Menkara, Hisham; Summers, Christopher

PA Phosphortech Corporation, USA

SO U.S. Pat. Appl. Publ., 12 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20040227465	A1	20041118	US 2003-628115	20030728 <--
	US 6982045	B2	20060103		
	WO 2004111156	A1	20041223	WO 2004-US15295	20040514 <--
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				

	CN 1788069	A	20060614	CN 2004-80012825	20040514 <--
	JP 2007500776	T	20070118	JP 2006-533115	20040514 <--
	KR 798054	B1	20080128	KR 2005-721662	20051114 <--

PRAI US 2003-471619P P 20030517 <--
 US 2003-628115 A 20030728 <--
 WO 2004-US15295 W 20040514

AB Phosphors useful in the manufacture of white light emitting diodes are described by the formula: $Sr_xBa_yCa_zSiO_4:Eu$ in which x, y, and z are each independently variable to be any value between about 0 and about 2, including without limitation 0.001 and 2, and every thousandth inbetween, subject to the proviso that the sum of x, y, or z is equal to at least 1, and in which Eu is present in any amount between about 0.0001% and about 5% by weight based upon the phosphor's total weight, wherein substantially all of the europium present is present in the divalent state. A phosphor according to the invention may optionally further comprise an element selected from the group consisting of: Ca, Mn, Ti, Pb, and Sn and is present in any amount between about 0.0001% and about 5% by weight based on the phosphor's total weight. Light-emitting devices employing the phosphors are also discussed.

IT 7440-53-1, Europium, properties
 RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses) (dopant; light emitting device having silicate fluorescent phosphor)

RN 7440-53-1 HCAPLUS
 CN Europium (CA INDEX NAME)

Eu

IT 7439-96-5, Manganese, uses 7440-45-1, Cerium, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses) (europium-doped silicate containing; light emitting device having silicate fluorescent phosphor)

RN 7439-96-5 HCAPLUS
 CN Manganese (CA INDEX NAME)

Mn

RN 7440-45-1 HCAPLUS
 CN Cerium (CA INDEX NAME)

Ce

IT 675819-84-8, Barium calcium strontium silicate ((Ba,Ca,Sr) $2(SiO_4)$)
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses) (europium-doped; light emitting device having silicate fluorescent phosphor)

RN 675819-84-8 HCAPLUS
 CN Barium calcium strontium silicate ((Ba,Ca,Sr) $2(SiO_4)$) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	1	17181-37-2
Ca	0 - 2	7440-70-2
Ba	0 - 2	7440-39-3
Sr	0 - 2	7440-24-6

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Alablanche	1992			US 5140604 A	HCAPLUS
Bhandari	1999			US 6006582 A	HCAPLUS
Do	1997			US 5608554 A	HCAPLUS
Hohn	2000			US 6066861 A	HCAPLUS
ivastava	2001			US 6255670 B1	HCAPLUS
ivastava	2001			US 6278135 B1	HCAPLUS
ivastava	2003			US 6555958 B1	HCAPLUS
ivastava	2003			US 6621211 B1	HCAPLUS
Kato	1993			US 5198679 A	HCAPLUS
Kita	2003			US 6656608 B1	HCAPLUS
Kotera	1985			US 4512911 A	HCAPLUS
Lambert	1997			US 5698857 A	HCAPLUS
Levinson	2002			US 6429583 B1	HCAPLUS
Nakamura	1987			US 4661419 A	HCAPLUS
Ouwkerk	1995			US 5422538 A	HCAPLUS
Shimizu	1999			US 5998925 A	HCAPLUS
Shimizu	2000			US 6153971 A	HCAPLUS
Solanki	1997			US 5602445 A	HCAPLUS
Watanabe	1997			US 5648181 A	HCAPLUS

L88 ANSWER 15 OF 32 HCAPLUS COPYRIGHT 2008 ACS on SIN

AN 2004:681091 HCAPLUS Full-text

DN 141:197200

TI White light LED device

IN Doxsee, Daniel Darcy; Setiur, Anant Achyut; Brown, Zena R.;
Srivastava, Alok; Comanco, Holly

PA Gelcore, LLC, USA; General Electric Company

SO U.S. Pat. Appl. Publ., 19 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20040159846	A1	20040819	US 2003-368115	20030218 <--
	US 6936857	B2	20050830		
PRAI	US 2003-368115		20030218	<--	

AB A light source including a specific LED and phosphor combination capable of emitting white light for direct illumination. In one embodiment, the light source includes an LED chip emitting in the 460-470 nm range radiationally coupled to a phosphor comprising $\text{Ca}_8\text{Mg}(\text{SiO}_4)_4\text{Cl}_2:\text{Eu}^{2+}, \text{Mn}^{2+}$. In a second embodiment, the light source includes an LED chip emitting at about 430 nm and a phosphor comprising a blend of $\text{Sr}_4\text{Al}_{14}\text{O}_{25}:\text{Eu}^{2+}$ (SAE) and a second phosphor having the formula $(\text{Tb}_{1-x-y}\text{A}_x\text{RE}_y)_3\text{D}_2\text{O}_{12}$, where A is a member selected from the group consisting of Y, La, Gd, and Sm; RE is a member selected from the group consisting of Ce, Pr, Nd, Sm, Eu, Gd, Dy, Ho, Er, Tm, Yb, and Lu; D is a member selected from the group consisting of Al, Ga, and In; x is in the range from 0 to about 0.5, y is in the range from about 0 to about 0.2, and z is in

the range from about 4 to about 5. Both embodiments produce light having the coordinates $x = 0.240-0.260$ and $y = 0.340-0.360$ on the CIE chromaticity diagram.

IT 16397-91-4, Manganese(2+), properties 16910-54-6, Europium(2+), properties
 RL: CPS (Chemical process); DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
 (white light LED device)
 RN 16397-91-4 HCAPLUS
 CN Manganese, ion (Mn2+) (CA INDEX NAME)

Mn 2+

RN 16910-54-6 HCAPLUS
 CN Europium, ion (Eu2+) (CA INDEX NAME)

Eu 2+

IT 7440-45-1, Cerium, properties 76125-60-5, Aluminum strontium oxide (Al14Sr4O25) 127575-65-9, Aluminum gallium indium nitride
 RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
 (white light LED device)
 RN 7440-45-1 HCAPLUS
 CN Cerium (CA INDEX NAME)

Ce

RN 76125-60-5 HCAPLUS
 CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	25	17778-80-2
Sr	4	7440-24-6
Al	14	7429-90-5

RN 127575-65-9 HCAPLUS
 CN Aluminum gallium indium nitride ((Al,Ga,In)N) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
In	0 - 1	7440-74-6
Ga	0 - 1	7440-55-3
Al	0 - 1	7429-90-5

RETABLE

Referenced Author (RAU)	Year (RKY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	2000			IWO 0033389	HCAPLUS
Anon	2001			IWO 0189000 A1	HCAPLUS
Anon	2001			IEP 1138747 A2	HCAPLUS
Anon	2001			IEP 1139440 A2	HCAPLUS
Chen	1999			IUS 5962971 A	HCAPLUS
Comanzo	2002			IUS 6409938 B1	HCAPLUS
Doughty	1998			IUS 5851963 A	HCAPLUS
Duggal	2001			IUS 6294800 B1	HCAPLUS
ivastava	2001			IUS 6255670 B1	HCAPLUS
ivastava	2001			IUS 6278135 B1	HCAPLUS
ivastava	2003			IUS 6596195 B2	HCAPLUS
Lowery	1999			IUS 5959316 A	HCAPLUS
Okazaki	2003			IUS 20030030060 A1	HCAPLUS
Soules	2001			IUS 6252254 B1	HCAPLUS
Tasaki	2001			IUS 6319425 B1	HCAPLUS
Vriens	1998			IUS 5813753 A	

L88 ANSWER 16 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2004:632965 HCAPLUS [Full-text](#)

DN 141:164621

TI High luminosity phosphor blends for generating white
light from near-UV/blue light-emitting
devices

IN Setlur, Anant Achyut; Srivastava, Alok Mani;
Comanzo, Holly Ann

PA General Electric Company, USA

SO U.S. Pat. Appl. Publ., 13 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	US 20040150316	A1	20040805	US 2003-356163	20030131 <--
	US 6844671	B2	20050118		
	JP 2004231966	A	20040819	JP 2004-22389	20040130 <--
	JP 3975298	B2	20070912		
PRAI	US 2003-356163	A	20030131	<--	

AB The present invention provides phosphor blends that are excitable by electromagnetic radiation having wavelengths in the near UV-to-blue range (from about 315 nm to about 480 nm) to emit a visible light in a range of wavelengths from about 490 nm to about 770 nm. A phosphor blend of the present invention comprises a mixture of at least two phosphors. The first phosphor of the mixture comprises Sr₂P₂O₇:Eu²⁺,Mn²⁺; wherein at least one element selected from the group consisting of Ba, Zn, Ca, and Mg partially substitutes strontium. The second phosphor is at least one selected from the group consisting of Sr₄Al₁₄O₂₅:Eu²⁺; (Ba, Sr, Ca)MgAl₁₀O₁₇:Eu²⁺; (Ba, Sr, Ca)MgAl₁₀O₁₇:Eu²⁺,Mn²⁺; (Sr, Ba, Ca, Mg)₅(PO₄)₃Cl:Eu²⁺; and 3.5 MgO·0.5 MgF₂·GeO₂:Mn²⁺.

IT 16397-91-4, Manganese(2+), properties 16910-54-6,

Europium(2+), properties

RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); USES (Uses)

(high luminosity phosphor blends for generating white
light from near-UV/blue light-emitting

devices)
 RN 16397-91-4 HCAPLUS
 CN Manganese, ion (Mn2+) (CA INDEX NAME)

Mn2+

RN 16910-54-6 HCAPLUS
 CN Europium, ion (Eu2+) (CA INDEX NAME)

Eu2+

IT 12159-91-0, Germanium magnesium fluoride oxide (Ge2Mg8F2011)
 19768-33-3, Manganese(4+), properties 76125-60-5,
 Aluminum strontium oxide (Al14Sr4O25) 473908-57-5
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (high luminosity phosphor blends for generating white
 light from near-UV/blue light-emitting
 devices)
 RN 12159-91-0 HCAPLUS
 CN Germanium magnesium fluoride oxide (Ge2Mg8F2011) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	11	17778-80-2
F	2	14762-94-8
Ge	2	7440-56-4
Mg	8	7439-95-4

RN 19768-33-3 HCAPLUS
 CN Manganese, ion (Mn4+) (CA INDEX NAME)

Mn4+

RN 76125-60-5 HCAPLUS
 CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	25	17778-80-2
Sr	4	7440-24-6
Al	14	7429-90-5

RN 473908-57-5 HCAPLUS
 CN Aluminum barium calcium magnesium strontium oxide (Al10(Ba,Ca,Sr)MgO17)
 (CA INDEX NAME)

Component	Ratio	Component Registry Number

O		17		17778-80-2
Ca		0 - 1		7440-70-2
Ba		0 - 1		7440-39-3
Sr		0 - 1		7440-24-6
Mg		1		7439-95-4
Al		10		7429-90-5

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Blasse, G	1994		108	Luminescent Material	
McNulty	2003			US 20030111955 A1	HCAPLUS
Nakamura	1998			US 5777350 A	
Setlur	2004			US 6685852 B2	HCAPLUS
Shigeo Shionoya	1999		367	Phosphor Handbook	
Srivastava	2003			US 20030067008 A1	
Srivastava	2003			US 6621211 B1	HCAPLUS

L88 ANSWER 17 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2004:485893 HCAPLUS Full-text

DN 141:44647

TI Blue-green Sr4Al14O25:Eu2+ phosphor for fluorescent lighting applications
 IN Srivastava, Alok; Comanzo, Holly; Manivannan,
 Venkatesan; Setlur, Anant Achyut

PA General Electric Company, USA

SO Eur. Pat. Appl., 11 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1429370	A2	20040616	EP 2003-255874	20030919 <--
	EP 1429370	A3	20050629		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	US 20040113537	A1	20040617	US 2002-317372	20021212 <--
	US 6867536	B2	20050315		
	JP 2004269845	A	20040930	JP 2003-327078	20030919 <--
	CN 1507004	A	20040623	CN 2003-10101291	20031016 <--
PRAI	US 2002-317372	A	20021212	<--	

AB Phosphor blends and fluorescent lamps employing the blends are described which comprise a first phosphor layer for converting UV radiation to visible illumination, the layer comprising a red phosphor emitting at ≈ 610 to 640 nm with a peak emission at ≈ 610 to 625 nm, a green phosphor emitting at ≈ 500 nm to ≈ 600 nm with a peak emission at ≈ 535 to ≈ 555 nm, and a blue phosphor emitting at ≈ 440 to ≈ 470 nm and a phosphor having the formula $\text{Sr}_4\text{Al}_{14}\text{O}_{25}:\text{Eu}^{2+}$ (SAE). The resulting lamp will exhibit a white light having a color rendering index of 90 or higher with a correlated color temperature of from 2500 to 10000 K. The use of SAE in phosphor blends of lamps results in high CRI light sources with increased stability and acceptable lumen maintenance over the course of the lamp life.

IT 7440-53-1, Europium, properties 16910-54-6,

Europium(2+), properties

RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(blue-green Sr4Al14O25:Eu2+ phosphor for fluorescent lighting applications)

RN 7440-53-1 HCAPLUS

CN Europium (CA INDEX NAME)

Eu

RN 16910-54-6 HCAPLUS

CN Europium, ion (Eu2+) (CA INDEX NAME)

Eu2+

IT 76125-60-5, Aluminum strontium oxide (Al14Sr4O25)

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(europium-doped; blue-green Sr4Al14O25:Eu2+ phosphor for fluorescent lighting applications)

RN 76125-60-5 HCAPLUS

CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	25	17778-80-2
Sr	4	7440-24-6
Al	14	7429-90-5

IT 7440-45-1, Cerium, properties

RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(lanthanum phosphate doped with; blue-green Sr4Al14O25:Eu2+ phosphor for fluorescent lighting applications)

RN 7440-45-1 HCAPLUS

CN Cerium (CA INDEX NAME)

Ce

L88 ANSWER 18 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2004:485892 HCAPLUS [Full-text](#)

DN 141:44692

TI Red phosphors for use in high CRI fluorescent lamps

IN Srivastava, Alok; Comanzo, Holly; Manivannan, Vankatesan; Setlur, Anant Achyut

PA General Electric Company, USA

SO Eur. Pat. Appl., 14 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1429369	A2	20040616	EP 2003-256306	20031007 <--
	EP 1429369	A3	20050629		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	US 20040113538	A1	20040617	US 2002-317423	20021212 <--
	US 6965193	B2	20051115		
	CN 1510104	A	20040707	CN 2003-10120908	20031212 <--
PRAI	US 2002-317423	A	20021212	<--	

AB The invention refers to novel red emitting phosphors for use in fluorescent lamps resulting in superior color rendering index values compared to conventional red phosphors. Also disclosed is a fluorescent lamp including a phosphor layer comprising blends of one or more of a blue phosphor, a blue-green phosphor, a green phosphor and a red phosphor selected from the group consisting of SrY2O4:Eu3+, (Y,Gd)Al3B4O12:Eu3+, and [(Y1-x-y-m)La]B3O3:Eu3+ wherein y<0.50 and m = 0.001-0.3. The phosphor layer can optionally include an addnl. deep red phosphor and a yellow emitting phosphor. The resulting lamp will exhibit a white light having a color rendering index of 90 or higher with a correlated color temperature of from 2500 to 10000 K. The use of the disclosed red phosphors in phosphor blends of lamps results in high CRI light sources with increased stability and acceptable lumen maintenance over the lamp life.

IT 76125-60-5, Aluminum strontium oxide Al14Sr4O25
 RL: DEV (Device component use); USES (Uses)
 (red phosphors for use in high CRI fluorescent lamps)
 RN 76125-60-5 HCAPLUS
 CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)

Component	Ratio	Component	Registry Number
O	25		17778-80-2
Sr	4		7440-24-6
Al	14		7429-90-5

IT 7440-27-9, Terbium, uses 7440-45-1, Cerium, uses 16397-91-4, Manganese 2+, uses 16910-54-6, Europium 2+, uses 22541-19-0, Europium 3+, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (red phosphors for use in high CRI fluorescent lamps)
 RN 7440-27-9 HCAPLUS
 CN Terbium (CA INDEX NAME)

Tb

RN 7440-45-1 HCAPLUS
 CN Cerium (CA INDEX NAME)

Ce

RN 16397-91-4 HCAPLUS
 CN Manganese, ion (Mn2+) (CA INDEX NAME)

Mn 2+

RN 16910-54-6 HCAPLUS
 CN Europium, ion (Eu2+) (CA INDEX NAME)

Eu 2+

RN 22541-18-0 HCAPLUS
 CN Europium, ion (Eu3+) (CA INDEX NAME)

Eu 3+

L88 ANSWER 19 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2004:485831 HCAPLUS Full-text

DN 141:44688

TI Phosphor system in fluorescent lamps

IN Soules, Thomas; Greci, Michael; Comanzo, Holly; Beers, William;
 Setlur, Anant; Manivannan, Venkatesan; Srivastava, Alck

PA General Electric Company, USA; Gelcore Lic

SO Eur. Pat. Appl., 17 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1428863	A1	20040616	EP 2003-257746	20031210 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	US 20040113539	A1	20040617	US 2002-317424	20021212 <--
	US 20050179358	A1	20050818	US 2005-94010	20050330 <--
	US 7119488	B2	20061010		
PRAI	US 2002-317424	A	20021212	<--	

AB The invention refers to a fluorescent lamp having a phosphor layer comprising a phosphor blend including four or more optimized phosphors emitting within a specific spectral range to optimize luminosity for a given color rendering index (CRI) and color coordinated temperature (CCT). The blend comprises at least four phosphors selected from the following: a blue phosphor having an emission peak at 440-490 nm, a blue-green phosphor having an emission peak at 475-525 nm, a green phosphor having an emission peak at 515-550 nm, an orange phosphor having an emission peak from 550-600 nm, a deep red phosphor having an emission peak at 615-665 nm, and a red phosphor having an emission peak at 600-670 nm.

IT 16397-51-4, Manganese 2+, uses 16910-54-6, Europium 2+,

uses 22541-18-0, Europium 3+, uses 76135-60-5,

Aluminum strontium oxide Al14Sr4O25

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(phosphor in fluorescent lamps)

RN 16397-91-4 HCAPLUS
 CN Manganese, ion (Mn2+) (CA INDEX NAME)

Mn2+

RN 16910-54-6 HCAPLUS
 CN Europium, ion (Eu2+) (CA INDEX NAME)

Eu2+

RN 22541-18-0 HCAPLUS
 CN Europium, ion (Eu3+) (CA INDEX NAME)

Eu3+

RN 76125-60-5 HCAPLUS
 CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	25	17778-80-2
Sr	4	7440-24-6
Al	14	7429-90-5

RETABE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Carter, B	2003			US 2003006694 A1	
Gen Electric	2002			EP 1184893 A	HCAPLUS
Matsushita Electronics	2000			EP 0993022 A	HCAPLUS
Oomen, E	2002			US 6472812 B2	HCAPLUS
Trushell, C	1997			US 5612590 A	HCAPLUS

L88 ANSWER 20 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2004:251924 HCAPLUS [Full-text](#)

DN 140:294463

TI Phosphor blends and backlight sources for color liquid crystal displays

IN Setlur, Anant Achyut; Srivastava, Alok Mani;
 Comanzo, Holly Ann

PA General Electric Company, USA

SO U.S. Pat. Appl. Publ., 11 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
PI US 20040056990	A1	20040325	US 2002-65181	20020924 <--

US 6809781 B2 20041026
 TW 282883 B 20070621 TW 2003-92125345 20030915 <--
 JP 2004168996 A 20040617 JP 2003-329248 20030922 <--
 EP 1403355 A1 20040331 EP 2003-255943 20030923 <--
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK
 KR 2004026628 A 20040331 KR 2003-65794 20030923 <--
 CN 1495486 A 20040512 CN 2003-158772 20030924 <--
 PRAI US 2002-65181 A 20020924 <--
 AB Phosphor compns. which comprises at least one phosphor emitting in each of the blue, green, and red regions of the visible spectrum are described for use in a backlight source of a color liquid crystal display. Liquid crystal displays are described which include a backlighting system comprising a backlight source emitting light having a first spectrum at least in a range from $\approx 300 - 450$ nm; and the above phosphor composition disposed to absorb light of at least a portion of the first spectrum and to emit light having a second spectrum different from the first spectrum; and a liquid crystal material disposed to receive light having the second spectrum.
 IT 675819-83-7
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (Ce,Tb-codoped; phosphor blends and backlight sources for liquid crystal displays)
 RN 675819-83-7 HCAPLUS
 CN Gadolinium lanthanum lutetium scandium yttrium borate ((Gd,La,Lu,Sc,Y) (BO3)) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
BO3	1	14213-97-9
Y	0 - 1	7440-65-5
Gd	0 - 1	7440-54-2
Sc	0 - 1	7440-20-2
Lu	0 - 1	7439-94-3
La	0 - 1	7439-91-0

IT 12525-03-0, Calcium lanthanum sulfide (CaLa2S4)
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (Ce-doped; phosphor blends and backlight sources for liquid crystal displays)
 RN 12525-03-0 HCAPLUS
 CN Calcium lanthanum sulfide (CaLa2S4) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
S	4	7704-34-9
Ca	1	7440-70-2
La	2	7439-91-0

IT 173525-28-5, Gadolinium lanthanum lutetium yttrium oxide sulfide (Gd,La,Lu,Y)2O2S 675819-90-6 675819-91-7
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (Eu,Bi-codoped; phosphor blends and backlight sources for liquid crystal displays)
 RN 173525-28-5 HCAPLUS
 CN Gadolinium lanthanum lutetium yttrium oxide sulfide ((Gd,La,Lu,Y)2O2S)

(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
S	1	7704-34-9
Y	0 - 2	7440-65-5
Gd	0 - 2	7440-54-2
Lu	0 - 2	7439-94-3
La	0 - 2	7439-91-0

RN 675819-90-6 HCAPLUS

CN Gadolinium lanthanum lutetium yttrium oxide ((Gd,La,Lu,Y)2O3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Y	0 - 2	7440-65-5
Gd	0 - 2	7440-54-2
Lu	0 - 2	7439-94-3
La	0 - 2	7439-91-0

RN 675819-91-7 HCAPLUS

CN Gadolinium lanthanum lutetium vanadium yttrium oxide ((Gd,La,Lu,Y)VO4) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	4	17778-80-2
Y	0 - 1	7440-65-5
V	1	7440-62-2
Gd	0 - 1	7440-54-2
Lu	0 - 1	7439-94-3
La	0 - 1	7439-91-0

IT 12535-38-5, Strontium yttrium sulfide (SrY2S4) 82992-94-7

, Calcium strontium sulfide ((Ca,Sr)S)

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(Eu-doped; phosphor blends and backlight sources for liquid crystal displays)

RN 12535-38-5 HCAPLUS

CN Yttrate(1-), dithioxo-, strontium (2:1) (9CI) (CA INDEX NAME)



RN 82992-94-7 HCAPLUS

CN Calcium strontium sulfide ((Ca,Sr)S) (CA INDEX NAME)

Component	Ratio	Component
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		Registry Number
S	1	7704-34-9
Ca	0 - 1	7440-70-2
Sr	0 - 1	7440-24-6

IT 12159-91-0, Germanium magnesium fluoride oxide (GeMg4F05.5)
 RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (Mn-doped; phosphor blends and backlight sources for liquid crystal displays)
 RN 12159-91-0 HCAPLUS
 CN Germanium magnesium fluoride oxide (Ge2Mg8F2011) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	11	17778-80-2
F	2	14762-94-8
Ge	2	7440-56-4
Mg	8	7439-95-4

IT 675819-87-1
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (cerium-doped; phosphor blends and backlight sources for liquid crystal displays)
 RN 675819-87-1 HCAPLUS
 CN Aluminum gadolinium gallium indium lanthanum lutetium praseodymium samarium terbium yttrium oxide (Al4.9-5.1Gd2.8-3Ga4.9-5.1In4.9-5.1La2.8-3Lu2.8-3Pr2.8-3Sm2.8-3Tb2.8-3Y2.8-3O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
In	4.9 - 5.1	7440-74-6
Y	2.8 - 3	7440-65-5
Ga	4.9 - 5.1	7440-55-3
Gd	2.8 - 3	7440-54-2
Tb	2.8 - 3	7440-27-9
Sm	2.8 - 3	7440-19-9
Pr	2.8 - 3	7440-10-0
Lu	2.8 - 3	7439-94-3
La	2.8 - 3	7439-91-0
Al	4.9 - 5.1	7429-90-5

IT 7439-96-5, Manganese, uses 7440-27-9, Terbium, uses 7440-45-1, Cerium, uses 7440-53-1, Europium, uses 7440-69-9, Bismuth, uses 16397-91-4, Manganese(2+), uses 16910-54-6, Europium(2+), uses 18323-26-7, Cerium(3+), uses 19768-33-3, Manganese(4+), uses 22541-18-0, Europium(3+), uses 22541-20-4, Terbium(3+), uses 23713-46-4, Bismuth(3+), uses
 RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (dopant; phosphor blends and backlight sources for liquid crystal displays)
 RN 7439-96-5 HCAPLUS
 CN Manganese (CA INDEX NAME)

Mn

RN 7440-27-9 HCAPLUS
CN Terbium (CA INDEX NAME)

Tb

RN 7440-45-1 HCAPLUS
CN Cerium (CA INDEX NAME)

Ce

RN 7440-53-1 HCAPLUS
CN Europium (CA INDEX NAME)

Eu

RN 7440-69-9 HCAPLUS
CN Bismuth (CA INDEX NAME)

Bi

RN 16397-91-4 HCAPLUS
CN Manganese, ion (Mn2+) (CA INDEX NAME)

Mn2+

RN 16910-54-6 HCAPLUS
CN Europium, ion (Eu2+) (CA INDEX NAME)

Eu2+

RN 18923-26-7 HCAPLUS
CN Cerium, ion (Ce3+) (CA INDEX NAME)

Ce³⁺

RN 19768-33-3 HCAPLUS
 CN Manganese, ion (Mn4+) (CA INDEX NAME)

Mn⁴⁺

RN 22541-18-0 HCAPLUS
 CN Europium, ion (Eu3+) (CA INDEX NAME)

Eu³⁺

RN 22541-20-4 HCAPLUS
 CN Terbium, ion (Tb3+) (CA INDEX NAME)

Tb³⁺

RN 23713-46-4 HCAPLUS
 CN Bismuth, ion (Bi3+) (CA INDEX NAME)

Bi³⁺

IT 675819-79-1
 RL: DEV (Device component use); PRP (Properties); TEM (Technical or
 engineered material use); USES (Uses)
 (doped; phosphor blends and backlight sources for liquid
 crystal displays)
 RN 675819-79-1 HCAPLUS
 CN Barium calcium magnesium strontium bromide chloride fluoride hydroxide
 phosphate ((Ba,Ca,Mg,Sr)5[Br,Cl,F,(OH)](PO4)3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Cl	0 - 1	22537-15-1
F	0 - 1	14762-94-8
HO	0 - 1	14280-30-9
O4P	3	14265-44-2
Br	0 - 1	10097-32-2
Ca	0 - 5	7440-70-2
Ba	0 - 5	7440-39-3
Sr	0 - 5	7440-24-6
Mg	0 - 5	7439-95-4

IT 473968-57-5

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(doped; phosphor blends and backlight sources for liquid crystal displays)

RN 473908-57-5 HCAPLUS

CN Aluminum barium calcium magnesium strontium oxide (Al10(Ba,Ca,Sr)MgO17)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	17	17778-80-2
Ca	0 - 1	7440-70-2
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Mg	1	7439-95-4
Al	10	7429-90-5

IT 20775-37-5, Barium magnesium silicate (Ba3MgSi2O8)

76125-60-5, Aluminum strontium oxide (Al14Sr4O25)

97358-83-3, Aluminum barium oxide (Al8BaO13) 144920-98-9

, Strontium borate metaphosphate oxide (Sr2(BO3)0.32(PO3)1.68O0.68)

675819-80-4, Boron calcium strontium oxide phosphate

(B0-2(Ca,Sr)10O0-3(PO4)6) 675819-82-6, Aluminum barium calcium

strontium oxide (Al2(Ba,Ca,Sr)O4) 675819-84-8, Barium calcium

strontium silicate ((Ba,Ca,Sr)2(SiO4)) 675819-85-9

675819-86-0

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(europium-doped; phosphor blends and backlight sources for liquid crystal displays)

RN 20775-37-5 HCAPLUS

CN Silicic acid (H4SiO4), barium magnesium salt (2:3:1) (8CI, 9CI) (CA INDEX NAME)



● 3/2 Ba

● 1/2 Mg

RN 76125-60-5 HCAPLUS

CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	25	17778-80-2
Sr	4	7440-24-6
Al	14	7429-90-5

RN 97358-83-3 HCAPLUS

CN Aluminum barium oxide (Al8BaO13) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	13	17778-80-2
Ba	1	7440-39-3
Al	8	7429-90-5

RN 144920-98-9 HCAPLUS

CN Strontium borate metaphosphate oxide (Sr2(BO3)0.32(PO3)1.68O0.68) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.68	17778-80-2
O3P	1.68	15389-19-2
BO3	0.32	14213-97-9
Sr	2	7440-24-6

RN 675819-80-4 HCAPLUS

CN Calcium strontium boride oxide phosphate ((Ca,Sr,B,O)10(PO4)6) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0 - 3	17778-80-2
O4P	6	14265-44-2
Ca	0 - 10	7440-70-2
B	0 - 2	7440-42-8
Sr	0 - 10	7440-24-6

RN 675819-82-6 HCAPLUS

CN Aluminum barium calcium strontium oxide (Al2(Ba,Ca,Sr)O4) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	4	17778-80-2
Ca	0 - 1	7440-70-2
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	2	7429-90-5

RN 675819-84-8 HCAPLUS

CN Barium calcium strontium silicate ((Ba,Ca,Sr)2(SiO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	1	17181-37-2
Ca	0 - 2	7440-70-2
Ba	0 - 2	7440-39-3
Sr	0 - 2	7440-24-6

RN 675819-85-9 HCAPLUS

CN Barium calcium magnesium strontium zinc silicate

((Ba,Ca,Mg,Sr,Zn)2(Si2O7)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O7Si2	1	20617-83-8
Ca	0 - 2	7440-70-2
Zn	0 - 1	7440-66-6
Ba	0 - 2	7440-39-3
Sr	0 - 2	7440-24-6
Mg	0 - 1	7439-95-4

RN 675819-86-0 HCAPLUS

CN Aluminum barium calcium gallium indium strontium sulfide
((Al,Ga,In)2(Ba,Ca,Sr)S4) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
In	0 - 2	7440-74-6
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	0 - 2	7429-90-5

RETABLE

Referenced Author (RAU)	Year (RYP)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	2000			EP 993022	HCAPLUS
Bournay	1986			US 4573766 A	
Chen	1999			US 5982092 A	HCAPLUS
Christou	2002			US 6492526 B1	HCAPLUS
Chu	1991			US 5000878 A	
Comanzo	2002			US 20020158565 A1	HCAPLUS
Danielson	2001			US 6203726 B1	HCAPLUS
Do	1997			US 5608554 A	HCAPLUS
Flynn	1998			US 5815228 A	HCAPLUS
Fujiyoshi	2001			US 6327008 B1	
Hampden-Smith	2001			US 6180029 B1	HCAPLUS
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Kumar	1999			US 5926239 A	HCAPLUS
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Pappalardo	1998			US 5838101 A	HCAPLUS
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Shimizu	2001			US 6224240 B1	HCAPLUS
Soules	2001			US 6252254 B1	HCAPLUS
Srivastava	2001			US 6278135 B1	HCAPLUS
Srivastava	2002			US 6466135 B1	HCAPLUS
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Stokich	1993			US 5185391 A	HCAPLUS
Vriens	1989			US 4882617 A	
Zhang	1997			US 5616285 A	HCAPLUS

AN 2004:204119 HCAPLUS Full-text
 DN 140:225570
 TI Coated LED with improved efficiency
 IN Soules, Thomas F.; Weaver, Stanton, Jr.; Chen, Chen-Lun Hsing; Kolodin, Boris; Sommers, Mathew; Setlur, Anan Achyut; Stecher, Thomas Elliot
 PA Gelcore LLC, USA
 SO PCT Int. Appl., 31 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 FAN.CNT 7

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004021461	A2	20040311	WO 2003-US27363	20030829 <--
	WO 2004021461	A3	20040930		
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
	RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
	AU 2003270052	A1	20040319	AU 2003-270052	20030829 <--
	EP 1540746	A2	20050615	EP 2003-751945	20030829 <--
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK			
	JP 2005537651	T	20051208	JP 2004-532037	20030829 <--
	CN 1836339	A	20060920	CN 2003-824703	20030829 <--
	EP 1930959	A1	20080611	EP 2008-4649	20030829 <--
	R:	AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LI, LU, MC, NL, PT, RO, SE, SI, SK, TR			
	US 20050239227	A1	20051027	US 2004-831862	20040426 <--
	US 7224000	B2	20070529		
	US 20060097245	A1	20060511	US 2005-312268	20051220 <--
	US 20070120135	A1	20070531	US 2006-525697	20060323 <--
PRAI	US 2002-407426P	F	20020830	<--	
	EP 2003-751945	A3	20030829	<--	
	WO 2003-US27363	W	20030829	<--	
	US 2004-831862	A2	20040426		
	US 2004-909564	A2	20040802		
AB	An LED device is described comprising a light emitting semiconductor; a transparent lens covering the semiconductor and spaced apart from the semiconductor (filled with a transparent filler); and a phosphor layer (e.g., Y3Al5O2:Ce, Tb3Al4.9O12:Ce, Sr4Al14O25:Eu) contained within or coated on an inside or outer surface of the lens, wherein positioning the phosphor layer away from the LED may improve the efficiency of the device and produce more consistent color rendition, and wherein the reflector and submount may also be coated with phosphor to further reduce internal absorption, for increase efficiency. A method of fabricating the LED device having a lens with a uniform phosphor coating, is also described entailing providing an LED mounted on a support; providing a transparent lens sized to fit over or around the support; depositing a uniform thickness phosphor coating on a surface of the lens; assembling the LED, mount and lens to form the LED device.				
IT	76125-60-5, Aluminum strontium oxide (Al14Sr4O25) RL: DEV (Device component use); USES (Uses) (phosphor; coated LED having phosphor positioned away from				

light emitting semiconductor for improved efficiency)

RN 76125-60-5 HCAPLUS

CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	25	17778-80-2
Sr	4	7440-24-6
Al	14	7429-90-5

IT 7440-45-1, Cerium, uses 7440-53-1, Europium, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES
 (Uses)

(phosphor; coated LED having phosphor positioned away from
 light emitting semiconductor for improved efficiency)

RN 7440-45-1 HCAPLUS

CN Cerium (CA INDEX NAME)

Ce

RN 7440-53-1 HCAPLUS

CN Europium (CA INDEX NAME)

Eu

L88 ANSWER 22 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2004:73599 HCAPLUS Full-text

DN 140:136167

TI Nitride semiconductor devices comprising eutectic-layer-bonded
 substrate and their fabrication

IN Nagahama, Shinichi; Sano, Masahiko; Yanamoto, Tomoya; Sakamoto, Keiji;
 Yamamoto, Masashi; Morita, Daisuke

PA Nichia Corporation, Japan

SO Eur. Pat. Appl., 58 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1385215	A2	20040128	EP 2003-15373	20030708 <--
	EP 1385215	A3	20070404		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	JP 2004266240	A	20040924	JP 2003-190549	20030702 <--
	JP 3985742	B2	20071003		
	KR 2004005612	A	20040116	KR 2003-45252	20030704 <--
	CN 1476050	A	20040218	CN 2003-146603	20030707 <--
	US 20040072383	A1	20040415	US 2003-614342	20030708 <--
	US 7105857	B2	20060912		
	US 20060128118	A1	20060615	US 2006-344197	20060201 <--
	US 7378334	B2	20080527		

	JP 2006324685	A	20061130	JP 2006-200847	20060724 <--
	US 20060267042	A1	20061130	US 2006-493661	20060727 <--
	US 7390684	B2	20080624		
PRAI	JP 2002-198761	A	20020708	<--	
	JP 2002-218199	A	20020726	<--	
	JP 2002-276309	A	20020920	<--	
	JP 2003-4919	A	20030110	<--	
	JP 2003-190549	A	20030702	<--	
	JP 2001-315391	A	20011012	<--	
	JP 2001-338462	A	20011102	<--	
	JP 2002-19191	A	20020128	<--	
	US 2003-614342	A3	20030708	<--	
	US 2003-673273	A3	20030930	<--	
AB	Nitride semiconductor devices are described which comprise a substrate having 2 opposed main faces; a bonding layer placed on 1 main face of the substrate and including an eutectic layer; ≥ 1 p-type nitride semiconductor layers placed on the bonding layer; an active layer including at least a well layer of Al _a In _b Ga _{1-a-b} N, ($0 < a \leq 1$, $0 < b \leq 1$, $a + b < 1$) and a barrier layer of Al _c In _d Ga _{1-c-d} N, ($0 < c \leq 1$, $0 < d \leq 1$, $c + d < 1$) and placed on the p-type nitride semiconductor layers; and n-type nitride semiconductor layers placed on the active layer and made of a nitride semiconductor which does not substantially absorb the light emitted from the active layer.				
IT	7439-96-5, Manganese, uses RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses) (Al ₁₂ Ba ₀ 19 doped with; nitride semiconductor devices comprising eutectic-layer-bonded substrate and their fabrication)				
RN	7439-96-5 HCAPLUS				
CN	Manganese (CA INDEX NAME)				
Mn					
IT	7440-53-1, Europium, uses RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses) (Al ₁₄ Sr ₄ 025 doped with; nitride semiconductor devices comprising eutectic-layer-bonded substrate and their fabrication)				
RN	7440-53-1 HCAPLUS				
CN	Europium (CA INDEX NAME)				
Eu					
IT	7440-45-1, Cerium, uses RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses) (YAG doped with; nitride semiconductor devices comprising eutectic-layer-bonded substrate and their fabrication)				
RN	7440-45-1 HCAPLUS				
CN	Cerium (CA INDEX NAME)				
Ce					

IT 76125-60-5, Aluminum strontium oxide (Al14Sr4O25)
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (europium-doped; nitride semiconductor devices comprising
 eutectic-layer-bonded substrate and their fabrication)
 RN 76125-60-5 HCAPLUS
 CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	25	17778-80-2
Sr	4	7440-24-6
Al	14	7429-90-5

IT 7439-98-7, Molybdenum, uses 127575-65-9, Aluminum
 gallium indium nitride (Al,Ga,In)N
 RL: DEV (Device component use); USES (Uses)
 (nitride semiconductor devices comprising
 eutectic-layer-bonded substrate and their fabrication)
 RN 7439-98-7 HCAPLUS
 CN Molybdenum (CA INDEX NAME)

Mo

RN 127575-65-9 HCAPLUS
 CN Aluminum gallium indium nitride ((Al,Ga,In)N) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
In	0 - 1	7440-74-6
Ga	0 - 1	7440-55-3
Al	0 - 1	7429-90-5

L88 ANSWER 23 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN
 AN 2004:20779 HCAPLUS Full-text
 DN 140:84348
 TI Yellow light-emitting halophosphate phosphors and light
 sources incorporating the same
 IN Srivastava, Alok Mani; Comanzo, Holly Ann;
 Setlur, Anant Achyut
 PA Gelcore LLC, USA
 SO PCT Int. Appl., 20 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2004003106	Al	20040108	WO 2002-US16524	20020522 <--
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,				

LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU 2002312049 A1 20040119 AU 2002-312049 20020522 <--
 CN 1628164 A 20050615 CN 2002-829006 20020522 <--
 EP 1539902 A1 20050615 EP 2002-739399 20020522 <--

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR

JP 2005526899 T 20050908 JP 2004-517470 20020522 <--
 PRAI WO 2002-US16524 A 20020522 <--

AB Halophosphate luminescent materials co-activated with europium and manganese ions and having the general formula of (Ca,Sr,Ba,Mg)5(P04)3(F,Cl,OH):Eu2+;Mn2+ are disclosed. The inclusion of manganese shifts the peak emission to longer wavelengths and, thus, is beneficial in generating a bright yellow-to-orange light. White-light sources are produced by disposing a halophosphate luminescent material, optionally with a blue light -emitting phosphor, in the vicinity of a near UV/blue LED. Blue light-emitting phosphors that may be used in embodiments of the present inventions are Sr4Al14O25:Eu2+, Sr6P6BO20:Eu2+, BaAl8O13:Eu2+, (Sr,Mg,Ca,Ba)5(P04)3Cl:Eu2+, and Sr2Si3O62SrCl2:Eu2+.

IT 76125-69-5, Aluminum strontium oxide (Al14Sr4O25)
 97358-83-3, Aluminum barium oxide (Al8BaO13)
 RL: DEV (Device component use); USES (Uses)
 (europium-doped; europium and manganese co-activated halophosphate phosphors and light sources incorporating these phosphors and)

RN 76125-60-5 HCAPLUS
 CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	25	17778-80-2
Sr	4	7440-24-6
Al	14	7429-90-5

RN 97358-83-3 HCAPLUS
 CN Aluminum barium oxide (Al8BaO13) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	13	17778-80-2
Ba	1	7440-39-3
Al	8	7429-90-5

IT 7429-96-5, Manganese, uses 7440-53-1, Europium, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (yellow light-emitting europium and manganese co-activated halophosphate phosphors and light sources incorporating the phosphors)

RN 7439-96-5 HCAPLUS
 CN Manganese (CA INDEX NAME)

Mn

RN 7440-53-1 HCAPLUS
 CN Europium (CA INDEX NAME)

Bu

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
AKASHI	2002			US 6414426 A	HCAPLUS
McKeag	1949			US 2488733 A	HCAPLUS
Pappalardo	1998			US 5838101 A	HCAPLUS
Wachtel	1997			US 4038204 A	HCAPLUS

L88 ANSWER 24 OF 32 HCAPLUS COPYRIGHT 2008 ACS on SIN

AN 2003:989824 HCAPLUS [Full-text](#)

DN 140:50023

TI Europium-activated phosphors containing oxides of rare-earth and group-IIIB metals and method of making the same

IN Comanzo, Holly Ann; Setlur, Anant Achyut;

Srivastava, Alok Mani

PA General Electric GRC, USA; General Electric Co.

SO U.S. Pat. Appl. Publ., 10 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20030230739	A1	20031218	US 2002-64121	20020612 <--
	US 6761837	B2	20040713		
	GB 2405408	A	20050302	GB 2003-20316	20030829 <--
	GB 2405408	B	20070919		
	DE 10340111	A1	20050324	DE 2003-10340111	20030830 <--
	US 20050279969	A1	20051222	US 2004-779086	20040217 <--
	US 7022263	B2	20060404		
PRAI	US 2002-64121	A	20020612	<--	
	DE 2003-10340111	T	20030830	<--	

AB Europium-activated phosphors are described which comprise oxides of at least a rare-earth metal selected from the group consisting of gadolinium, yttrium, lanthanum, and their combinations and at least a Group-IIIB metal selected from the group consisting of aluminum, gallium, indium, and their combinations. A method for making such phosphors comprises adding at least a halide of at least one of the selected Group-IIIB metals in the starting mixture and firing the starting mixture in an oxygen-containing atmospheric The phosphors produced by such a method exhibit improved absorption in the UV wavelength range and improved quantum efficiency.

IT 7440-53-1D, Europium, compds.

RL: RCT (Reactant); RACT (Reactant or reagent)

(europium-activated phosphors containing oxides of rare-earth and group-IIIB metals prepared using)

RN 7440-53-1 HCAPLUS

CN Europium (CA INDEX NAME)

Eu

IT 7440-53-1, Europium, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); TEM
 (Technical or engineered material use); USES (Uses)
 (europium-activated phosphors containing oxides of rare-earth and
 group-IIIB metals, phosphor blends, light
 sources and method of making phosphors)
 RN 7440-53-1 HCAPLUS
 CN Europium (CA INDEX NAME)

Eu

IT 76125-60-5, Aluminum strontium oxide (Al14Sr4O25)
 RL: DEV (Device component use); PRP (Properties); TEM (Technical or
 engineered material use); USES (Uses)
 (europium-doped phosphor; europium-activated phosphors containing oxides of
 rare-earth and group-IIIB metals, phosphor blends,
 light sources and method of making phosphors)
 RN 76125-60-5 HCAPLUS
 CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	25	17778-80-2
Sr	4	7440-24-6
Al	14	7429-90-5

IT 7439-96-5, Manganese, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES
 (Uses)
 (magnesium fluoride germanate doped with; europium-activated phosphors
 containing oxides of rare-earth and group-IIIB metals and phosphor
 blends used in light sources and containing)
 RN 7439-96-5 HCAPLUS
 CN Manganese (CA INDEX NAME)

Mn

IT 12159-91-0, Germanium magnesium fluoride oxide (GeMg4F05.5)
 RL: DEV (Device component use); USES (Uses)
 (manganese-doped; europium-activated phosphors containing oxides of
 rare-earth and group-IIIB metals and phosphor blends used in
 light sources and containing)
 RN 12159-91-0 HCAPLUS
 CN Germanium magnesium fluoride oxide (Ge2Mg8F2011) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number

O		11		17778-80-2
F		2		14762-94-8
Ge		2		7440-56-4
Mg		8		7439-95-4

IT 7440-27-9, Terbium, properties 7440-45-1, Cerium, properties
 RL: MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (phosphor dopant; europium-activated phosphors containing oxides of rare-earth and group-IIIB metals, phosphor blends, light sources and method of making phosphors)
 RN 7440-27-9 HCAPLUS
 CN Terbium (CA INDEX NAME)

Tb

RN 7440-45-1 HCAPLUS
 CN Cerium (CA INDEX NAME)

Ce

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	1977			JP 77-5228745 B	
Anon	2002				
Blasse, G	1994		108	Luminescent Material	
Borchardt	1966			US 3282856 A	HCAPLUS
Shigeo Shionoya	1999		367	Phosphor Handbook	
Xiang	2000			US 6048469 A	HCAPLUS

L88 ANSWER 25 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2003:875552 HCAPLUS Full-text

DN 139:343337

TI light-emitting device using fluorescent substance

IN Murazaki, Yoshinori

PA Nichia Corporation, Japan

SO PCT Int. Appl., 55 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003092081	A1	20031106	WO 2002-JP4179	20020425 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ,				

UA, UG, US, UZ, VN, YU, ZA, ZM, ZW
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU 2002251550 A1 20031110 AU 2002-251550 20020425 <--
 EP 1503428 A1 20050202 EP 2002-720613 20020425 <--
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR

JP 3956972 B2 20070808 JP 2004-500341 20020425 <--
 US 20050179364 A1 20050818 US 2004-511723 20041019 <--
 JP 2006352178 A 20061228 JP 2006-273278 20061004 <--

PRAI JP 2004-500341 A3 20020425 <--
 WO 2002-JP4179 A 20020425 <--

AB A light-emitting device including a semiconductor light-emitting element and a fluorescent substance for converting at least part of the emission spectrum of the light emitted from the semiconductor light-emitting element is characterized in that the emission spectrum of the light of the semiconductor light-emitting element lies at least in the UV region and in that the fluorescent substance is prepared by adding a red light-emission activator to the parent material of a blue light fluorescent substance. Therefore the color tone variation due to the variation of the emission spectrum of the light from the semiconductor caused by the variation of the excitation spectrum of the fluorescent substance is improved, and the light-emitting device emitting light with high luminance and excellent color rendering properties is produced at high yield. The light-emitting device can be used as a light source used for illumination, such as an illuminator for medical care or a flash light for copying machines, and required to have color rendering properties.

IT 76125-60-5, Aluminum strontium oxide (Al14Sr4O25)
 127575-65-9, Aluminum gallium indium nitride
 RL: DEV (Device component use); USES (Uses)
 (light-emitting device using fluorescent substance)

RN 76125-60-5 HCAPLUS
 CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	25	17778-80-2
Sr	4	7440-24-6
Al	14	7429-90-5

RN 127575-65-9 HCAPLUS
 CN Aluminum gallium indium nitride ((Al,Ga,In)N) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
N	1	17778-88-0
In	0 - 1	7440-74-6
Ga	0 - 1	7440-55-3
Al	0 - 1	7429-90-5

IT 7440-45-1, Cerium, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (light-emitting device using fluorescent substance)

RN 7440-45-1 HCAPLUS
 CN Cerium (CA INDEX NAME)

Ce

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Nichia Chemical Industr	1998			JP 10-112557 A	HCAPLUS
Nichia Chemical Industr	1998			JP 10-190053 A	HCAPLUS
Nichia Chemical Industr	1999			JP 11-298047 A	HCAPLUS
Nichia Chemical Industr	2001			JP 2001308393 A	HCAPLUS
Nichia Chemical Industr	2001			JP 2001352101 A	HCAPLUS
Toray Industries Inc	1997			JP 09-281900 A	

L88 ANSWER 26 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2003:609751 HCAPLUS Full-text

DN 139:157158

TI Yellow light-emitting halophosphate phosphors and light
sources incorporating the sameIN Srivastava, Alok Mani; Comanzo, Holly Ann;
Setlur, Anant Achyut

FA USA

SO U.S. Pat. Appl. Publ., 9 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20030146411	A1	20030807	US 2001-681686	20010521 <--
	US 6616862	B2	20030909		
PRAI	US 2001-681686		20010521	<--	

AB Halophosphate luminescent materials co-activated with Eu and Mn ions and of (Ca,Sr,Ba,Mg)5(PO4)3:Eu2+,Mn2+ are disclosed. The inclusion of Mn shifts the peak emission to longer wavelengths and, thus, is beneficial in generating a bright yellow-to-orange light. White- light sources are produced by disposing a halophosphate luminescent material, optionally with a blue light-emitting phosphor, in the vicinity of a near UV/blue LED. Blue light-emitting phosphors that may be used in embodiments of the present inventions are Sr4Al14O25:Eu2+, Sr6P6B2O20:Eu2+, BaAl8O13:Eu2+, (Sr,Mg,Ca,Ba)5(PO4)3Cl:Eu2+, and Sr2Si3O6·2SrCl2:Eu2+.

IT 76125-60-5, Aluminum strontium oxide (Al14Sr4O25)

97358-83-3, Aluminum barium oxide (Al8BaO13)

RL: DEV (Device component use); USES (Uses)

(blue-emitting phosphor combined with yellow-halophosphate phosphor for making white-emitting LED)

RN 76125-60-5 HCAPLUS

CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	25	17778-80-2
Sr	4	7440-24-6
Al	14	7429-90-5

RN 97358-83-3 HCAPLUS

CN Aluminum barium oxide (Al8BaO13) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	13	17778-80-2
Ba	1	7440-39-3
Al	8	7429-90-5

IT 16397-91-4, Manganese2+, uses 16910-54-6, Europium2+,
uses
RL: MOA (Modifier or additive use); USES (Uses)
(yellow-emitting halophosphate phosphors for light
source)

RN 16397-91-4 HCAPLUS

CN Manganese, ion (Mn2+) (CA INDEX NAME)

Mn2+

RN 16910-54-6 HCAPLUS

CN Europium, ion (Eu2+) (CA INDEX NAME)

Eu2+

L88 ANSWER 27 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2003:466704 HCAPLUS [Full-text](#)

DN 139:14758

TI light emitting device with phosphor
compositionIN Soules, Thomas Frederick; Beers, William Winder; Srivastava, Alok
Mari; Levinson, Lionel Monty; Duggal, Anil Raj

PA General Electric Company, USA

SO U.S., 8 pp., Cont.-in-part of U.S. Ser. No. 583,196.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6580097	B1	20030617	US 2000-718240	20001122 <--
	US 6252254	B1	20010626	US 1998-203212	19981130 <--
	US 6469322	B1	20021022	US 2000-583196	20000530 <--
PRAI	US 1998-19647	B2	19980206	<--	
	US 1998-203212	A3	19981130	<--	
	US 2000-583196	A2	20000530	<--	

AB The invention relates to a light source comprising a phosphor composition and a light emitting device such as an LED or a laser diode. The phosphor composition absorbs radiation having a 1st spectrum and emits radiation having a 2nd spectrum and comprises at least 1 of: YB03:Ce3+, Tb3+; BaMgAl10O17:Eu2+, Mn2+; (Sr, Ca, Ba) (Al, Ga)2S4:Eu2+; and Y3Al5O12:Ce3+; and at least 1 of: Y2O2S:Eu3+, Bi3+; YVO4 :Eu3+, Bi3+; SrS:Eu2+; SrY2S4:Eu2+; CaLa2S4:Ce3+; and (Ca, Sr)S:Eu2+. The phosphor composition and the light source together can produce white light with pleasing characteristics, such as

a color temperature of 3000-6500° K, a color rendering index of .apprx.83-87, and a device luminous efficacy of .apprx.10-20 lm per W.

IT 16397-91-4, Manganese(2+), uses 16910-54-6, Europium ion(2+), uses 18923-26-7, Cerium(3+), uses 22541-18-0, Europium(3+), uses 22541-20-4, Terbium(3+), uses 23713-46-4, Bismuth ion(3+), uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (activators; light emitting device with phosphor composition)
 RN 16397-91-4 HCAPLUS
 CN Manganese, ion (Mn2+) (CA INDEX NAME)

Mn2+

RN 16910-54-6 HCAPLUS
 CN Europium, ion (Eu2+) (CA INDEX NAME)

Eu2+

RN 18923-26-7 HCAPLUS
 CN Cerium, ion (Ce3+) (CA INDEX NAME)

Ce3+

RN 22541-18-0 HCAPLUS
 CN Europium, ion (Eu3+) (CA INDEX NAME)

Eu3+

RN 22541-20-4 HCAPLUS
 CN Terbium, ion (Tb3+) (CA INDEX NAME)

Tb3+

RN 23713-46-4 HCAPLUS
 CN Bismuth, ion (Bi3+) (CA INDEX NAME)

Bi3+

IT 12525-03-0, Calcium lanthanum sulfide (CaLa2S4)

RL: DEV (Device component use); USES (Uses)
(cerium-activated; light emitting device
with phosphor composition)

RN 12525-03-0 HCAPLUS

CN Calcium lanthanum sulfide (CaLa2S4) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
Ca	1	7440-70-2
La	2	7439-91-0

IT 12535-38-5, Strontium yttrium sulfide (SrY2S4) 82992-94-7
, Calcium strontium sulfide ((Ca,Sr)S)

RL: DEV (Device component use); USES (Uses)
(europium-activated; light emitting device
with phosphor composition)

RN 12535-38-5 HCAPLUS

CN Yttrate(1-), dithioxo-, strontium (2:1) (9CI) (CA INDEX NAME)

$\text{Ca}=\text{Y}=\text{S}$

● 1/2 Sr²⁺

RN 82992-94-7 HCAPLUS

CN Calcium strontium sulfide ((Ca,Sr)S) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0 - 1	7440-70-2
Sr	0 - 1	7440-24-6

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	1985			DE 3406798	HCAPLUS
Hohn	2001			US 20010028053 A1	
Reeh	2001			US 20010030326 A1	
Soules	2001			US 6252254 B1	HCAPLUS
Toma	1967	114		J Electrochem Soc:So	HCAPLUS

L88 ANSWER 28 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2002:833256 HCAPLUS Full-text

DN 137:343668

TI Phosphor blends for generating white light
from near-uv/blue light-emitting devices

IN Setlur, Anant Achyut; Srivastava, Alok Mani;
Comanzo, Holly Ann; Doxsee, Daniel Darcy

PA General Electric Co., USA

SO U.S. Pat. Appl. Publ., 18 pp.

CODEN: USXXCO

DT Patent

LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20020158565	A1	20021031	US 2001-681549	20010427 <--
	US 6685852	B2	20040203		
PRAI	US 2001-681549		20010427	<--	

AB Phosphor blends based on europium- and/or manganese-activated phosphors are described which are capable of absorbing electromagnetic radiation having wavelengths in the range from about 315 nm to about 480 nm. Light sources comprising light-emitting devices in combination with the blends are also described.

IT 473908-57-5

RL: DEV (Device component use); USES (Uses)
(europium-activated or europium- and manganese-activated; phosphor blends for generating white light on near-UV/blue light stimulation and light sources using the blends with electroluminescent devices)

RN 473908-57-5 HCAPLUS

CN Aluminum barium calcium magnesium strontium oxide (Al10(Ba,Ca,Sr)MgO17)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	17	17778-80-2
Ca	0 - 1	7440-70-2
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Mg	1	7439-95-4
Al	10	7429-90-5

IT 76125-60-5, Strontium aluminate (Sr4Al14O25)

RL: DEV (Device component use); USES (Uses)
(europium-activated; phosphor blends for generating white light on near-UV/blue light stimulation and light sources using the blends with electroluminescent devices)

RN 76125-60-5 HCAPLUS

CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	25	17778-80-2
Sr	4	7440-24-6
Al	14	7429-90-5

IT 12159-91-0, Germanium magnesium fluoride oxide (GeMg4FO5.5)

RL: DEV (Device component use); USES (Uses)
(manganese-activated; phosphor blends for generating white light on near-UV/blue light stimulation and light sources using the blends with electroluminescent devices)

RN 12159-91-0 HCAPLUS

CN Germanium magnesium fluoride oxide (Ge2Mg8F2011) (CA INDEX NAME)

Component	Ratio	Component Registry Number
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O		11	
F		2	
Ge		2	
Mg		8	

IT 7439-96-5, Manganese, uses 7440-53-1, Europium, uses 14546-48-6, Manganese +3, uses 16397-91-4, Manganese +2, uses 16910-54-6, Europium +2, uses 19768-33-3, Manganese +4, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (phosphor blends for generating white light on near-UV/blue light stimulation and light sources using the blends with electroluminescent devices)
 RN 7439-96-5 HCAPLUS
 CN Manganese (CA INDEX NAME)

Mn

RN 7440-53-1 HCAPLUS
 CN Europium (CA INDEX NAME)

Eu

RN 14546-48-6 HCAPLUS
 CN Manganese, ion (Mn3+) (CA INDEX NAME)

Mn 3+

RN 16397-91-4 HCAPLUS
 CN Manganese, ion (Mn2+) (CA INDEX NAME)

Mn 2+

RN 16910-54-6 HCAPLUS
 CN Europium, ion (Eu2+) (CA INDEX NAME)

Eu 2+

RN 19768-33-3 HCAPLUS
 CN Manganese, ion (Mn4+) (CA INDEX NAME)

Mn 4 +

L88 ANSWER 29 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2001:851542 HCAPLUS Full-text

DN 136:12555

TI Blue-green illumination systems and white light
emitting phosphor blends for LED
devicesIN Srivastava, Alok Mani; Comanzo, Holly Ann; McNulty,
Thomas Francis

PA General Electric Company, USA

SO PCT Int. Appl., 47 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001089001	A2	20011122	WO 2001-US15654	20010515 <--
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW			
	RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
	US 6621211	B1	20030916	US 2000-570932	20000515 <--
	AU 2001064607	A5	20011126	AU 2001-64607	20010515 <--
	EP 1332520	A1	20030806	EP 2001-939044	20010515 <--
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR			
	JP 2004501512	T	20040115	JP 2001-584500	20010515 <--
	CN 1636259	A	20050706	CN 2001-811702	20010515 <--
	US 20040007961	A1	20040115	US 2003-617028	20030711 <--
	US 6939481	B2	20050906		
PRAI	US 2000-570932	A	20000515	<--	
	WO 2001-US15654	W	20010515	<--	

AB Blue-green illumination systems comprising a light-emitting diode and ≥ 1 luminescent material having ≥ 2 peak emission wavelengths are described in which the emission CIE color coordinates of the ≥ 2 peak emission wavelengths are located within an area of a pentagon on a CIE chromaticity diagram, whose corners have the following CIE color coordinates $x = 0.0137$ and $y = 0.4831$; $x = 0.2240$ and $y = 0.3890$; $x = 0.2800$ and $y = 0.4500$; $x = 0.2879$ and $y = 0.5196$; and $x = 0.0108$ and $y = 0.7220$. The illumination system may be used as the green light of a traffic signal. Blends of phosphors (e.g., for the production of white light) are also described.

IT 7439-96-5, Manganese, uses 7440-53-1, Europium, uses 16397-91-4, Manganese +2, uses 16910-54-6, Europium +2, uses 19768-33-3, Manganese +4, uses RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(blue-green illumination systems and white light
emitting phosphor blends for LED

(devices)

RN 7439-96-5 HCAPLUS
 CN Manganese (CA INDEX NAME)

Mn

RN 7440-53-1 HCAPLUS
 CN Europium (CA INDEX NAME)

Eu

RN 16397-91-4 HCAPLUS
 CN Manganese, ion (Mn2+) (CA INDEX NAME)

Mn2+

RN 16910-54-6 HCAPLUS
 CN Europium, ion (Eu2+) (CA INDEX NAME)

Eu2+

RN 19768-33-3 HCAPLUS
 CN Manganese, ion (Mn4+) (CA INDEX NAME)

Mn4+

IT 12159-91-0, Germanium magnesium fluoride oxide (GeMg4F05.5)
 RL: DEV (Device component use); USES (Uses)
 (manganese-activated; blue-green illumination systems and white
 light emitting phosphor blends for
 LED devices)
 RN 12159-91-0 HCAPLUS
 CN Germanium magnesium fluoride oxide (Ge2Mg8F2011) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	11	17778-80-2
F	2	14762-94-8
Ge	2	7440-56-4
Mg	8	7439-95-4

AN 2001:851541 HCAPLUS Full-text
 DN 135:378522
 TI A white light emitting phosphor
 blend for LED devices
 IN Sriyastava, Alok Mani; Comanto, Holly Ann
 PA General Electric Company, USA
 SO PCT Int. Appl., 35 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001089000	A1	20011122	WO 2001-US15494	20010514 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	US 6501100	B1	20021231	US 2000-571379	20000515 <--
	CA 2375069	A1	20011122	CA 2001-2375069	20010514 <--
	AU 2001061553	A	20011126	AU 2001-61553	20010514 <--
	AU 782598	B2	20050811		
	BR 2001006639	A	20020416	BR 2001-6639	20010514 <--
	EP 1295347	A1	20030326	EP 2001-935460	20010514 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	JP 2003533852	T	20031111	JP 2001-584499	20010514 <--
	IN 2002KN00057	A	20050923	IN 2002-KN57	20020114 <--
	US 20030067008	A1	20030410	US 2002-295943	20021118 <--
	US 7015510	B2	20060321		
	US 20060113553	A1	20060601	US 2006-276080	20060213 <--
	US 7267785	B2	20070911		
PRAI	US 2000-571379	A	20000515	<--	
	WO 2001-US15494	W	20010514	<--	
	US 2002-295943	A3	20021118	<--	
AB	White light illumination systems are described which comprise including a radiation source, a first luminescent material having a peak emission wavelength of about 570-620 nm, and a second luminescent material, having a peak emission wavelength of about 480-500 nm, which is different from the first luminescent material. The radiation source may be a UV light-emitting diode and the luminescent materials may be blends of two phosphors. Methods of producing the sources entailing forming the appropriate blends, which may further entail production of a phosphor from raw materials, are also described. A human observer perceives the combination of the orange and the blue-green phosphor emissions as white light.				
IT	11984-89-2, Strontium chlorosilicate (Sr4Cl4Si3O8) 76125-60-5, Strontium aluminate (Sr4Al14O25) 97358-83-3, Aluminum barium oxide (Al8BaO13) 144920-98-9, Strontium borate metaphosphate oxide (Sr2(BO3)0.32(PO3)1.68O0.68) RL: DEV (Device component use); USES (Uses) (europium-activated; white light-emitting phosphor blends for light-emitting diodes and their production)				
RN	11084-89-2 HCAPLUS				
CN	Silicon strontium chloride oxide (Si3Sr4Cl4O8) (CA INDEX NAME)				

Component	Ratio	Component Registry Number
Cl	4	22537-15-1
O	8	17778-80-2
Sr	4	7440-24-6
Si	3	7440-21-3

RN 76125-60-5 HCAPLUS

CN Aluminum strontium oxide (Al14Sr4O25) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	25	17778-80-2
Sr	4	7440-24-6
Al	14	7429-90-5

RN 97358-83-3 HCAPLUS

CN Aluminum barium oxide (Al8BaO13) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	13	17778-80-2
Ba	1	7440-39-3
Al	8	7429-90-5

RN 144920-98-9 HCAPLUS

CN Strontium borate metaphosphate oxide (Sr2(BO3)0.32(PO3)1.68O0.68) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.68	17778-80-2
O3P	1.68	15389-19-2
BO3	0.32	14213-97-9
Sr	2	7440-24-6

IT 7440-53-1, Europium, uses 16910-54-6, Europium +2, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(white light-emitting phosphor
blends for light-emitting diodes
and their production)

RN 7440-53-1 HCAPLUS

CN Europium (CA INDEX NAME)

Eu

RN 16910-54-6 HCAPLUS

CN Europium, ion (Eu2+) (CA INDEX NAME)

Eu 2+

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Juestel, T	2000			US 6084250 A	HCAPLUS
Toshiba Electronic Engi	2000			JP 2000183408 A	HCAPLUS

L88 ANSWER 31 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2001:464400 HCAPLUS Full-text

DN 135:68323

TI Light-emitting devices with phosphor composition

IN Soules, Thomas Frederick; Beers, William Winder; Srivastava, Alok Mani; Levinson, Lionel Monty; Duggal, Anil Raj

PA General Electric Company, USA

SO U.S., 8 pp., Cont.-in-part of U.S. Ser. No. 19,647, abandoned.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6252254	B1	20010626	US 1998-203212	19981130 <--
	WO 2000033390	A1	20000608	WO 1999-US28280	19991130 <--
	W:				
	AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW:				
	GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	AU 2000020339	A	20000619	AU 2000-20339	19991130 <--
	EP 1051759	A1	20001115	EP 1999-964013	19991130 <--
	R:				
	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2002531956	T	20020924	JP 2000-585942	19991130 <--
	US 6469322	B1	20021022	US 2000-583196	20000530 <--
	US 6580097	B1	20030617	US 2000-718240	20001122 <--
FRAI	US 1998-19647	B2	19980206	<--	
	US 1998-203212	A	19981130	<--	
	WO 1999-US28280	W	19991130	<--	
	US 2000-583196	A2	20000530	<--	

AB Light-emitting devices are described which comprise a blue light-emitting diode (LED) covered with a phosphor-containing covering containing a green-emitting phosphor and a red-emitting phosphor; where the green and red phosphors are excitable by the blue-emitting LED, such that the green and red phosphors absorb radiation with a first spectrum emitted by the LED; the green phosphor emits radiation having a second spectrum; the red phosphor emitting radiation having a third spectrum; the green phosphor comprising ≥ 1 of YB03:Ce3+, Tb3+; BaMgAl10O17:Eu2+, Mn2+; and (Sr,Ca,Ba)(Al,Ga)2S4:Eu2+; and the red phosphor comprising ≥ 1 of: Y2O2S:Eu3+, Bi3+; YVO4:Eu3+, Bi3+; SrS:Eu2+; SrY2S4:Eu2+; CaLa2S4:Ce3+; and (Ca,Sr)S:Eu2+. The phosphors and the LED together can produce white light with pleasing characteristics, such as a

color temperature of 3000-6500° K, a color rendering index of .apprx.83-87, and a device luminous efficacy of .apprx.10-20 lm/W.

IT 7439-96-5, Manganese, properties 7440-09-7, Potassium, properties 7440-27-9, Terbium, properties 7440-45-1, Cerium, properties 7440-53-1, Europium, properties 7440-69-9, Bismuth, properties 16397-91-4, Manganese(2+), properties 16910-54-6, Europium(2+), properties 18923-26-7, Cerium(3+), properties 22541-18-0, Europium(3+), properties 22541-20-4, Terbium(3+), properties 23713-46-4, Bismuth(3+), properties 24263-36-9, Potassium(1+), properties
 RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
 (phosphor activator; light emitting device with phosphor composition)
 RN 7439-96-5 HCAPLUS
 CN Manganese (CA INDEX NAME)

Mn

RN 7440-09-7 HCAPLUS
 CN Potassium (CA INDEX NAME)

K

RN 7440-27-9 HCAPLUS
 CN Terbium (CA INDEX NAME)

Tb

RN 7440-45-1 HCAPLUS
 CN Cerium (CA INDEX NAME)

Ce

RN 7440-53-1 HCAPLUS
 CN Europium (CA INDEX NAME)

Eu

RN 7440-69-9 HCAPLUS
 CN Bismuth (CA INDEX NAME)

B1

RN 16397-91-4 HCAPLUS
CN Manganese, ion (Mn2+) (CA INDEX NAME)

Mn²⁺

RN 16910-54-6 HCAPLUS
CN Europium, ion (Eu2+) (CA INDEX NAME)

Eu²⁺

RN 18923-26-7 HCAPLUS
CN Cerium, ion (Ce3+) (CA INDEX NAME)

Ce³⁺

RN 22541-18-0 HCAPLUS
CN Europium, ion (Eu3+) (CA INDEX NAME)

Eu³⁺

RN 22541-20-4 HCAPLUS
CN Terbium, ion (Tb3+) (CA INDEX NAME)

Tb³⁺

RN 23713-46-4 HCAPLUS
CN Bismuth, ion (Bi3+) (CA INDEX NAME)

Bi³⁺

RN 24203-36-9 HCAPLUS
CN Potassium, ion (K1+) (CA INDEX NAME)

K⁺

IT 12525-03-0, Calcium lanthanum sulfide (CaLa2S4) 12535-38-5
 , Strontium yttrium sulfide (SrY2S4) 82992-94-7, Calcium
 strontium sulfide (CaSr)S
 RL: DEV (Device component use); PEP (Physical, engineering or chemical
 process); PRP (Properties); PROC (Process); USES (Uses)
 (red phosphor host lattice; light emitting
 device with phosphor composition)
 RN 12525-03-0 HCAPLUS
 CN Calcium lanthanum sulfide (CaLa2S4) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
Ca	1	7440-70-2
La	2	7439-91-0

RN 12535-38-5 HCAPLUS
 CN Yttrate(1-), dithioxo-, strontium (2:1) (9CI) (CA INDEX NAME)



● 1/2 Sr²⁺

RN 82992-94-7 HCAPLUS
 CN Calcium strontium sulfide ((Ca,Sr)S) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0 - 1	7440-70-2
Sr	0 - 1	7440-24-6

RETABLE

Referenced Author (RAU)	Year (RBY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Abe	1996			US 5535230	HCAPLUS
Anon	1985			DE 3406798	HCAPLUS
Anon	1993			JP 5152609	
Anon	1997			WO 9748138	HCAPLUS
Anon	1997			WO 9750132	HCAPLUS
Anon	1998			JP 10012925	
Anon	1998			JP 1012916	
Anon	1998			JP 10163535	HCAPLUS
Anon	1998			JP 10170341	
Anon	1998			JP 1022527	
Anon	1998			DE 19638667	HCAPLUS
Anon	1998			DE 19756360	HCAPLUS
Anon	1998			WO 9805078	HCAPLUS
Anon	1998			WO 9812757	HCAPLUS
Anon	1998			WO 9819290	HCAPLUS
Anon	1998			WO 9839805	HCAPLUS

Blasse, G	1970	13	118	J Luminescence	HCAPLUS
Blasse, G	1994		110	Luminescent Material	
Butterworth	1998			US 5847507	HCAPLUS
Chen	1999			US 5962971	HCAPLUS
Datta, R	1967	1114	1057	J Electrochem Soc:So	HCAPLUS
Datta, R	1967	1239	1355	Trans of Metal Soc o	HCAPLUS
Dutta	1998			US 5821569	HCAPLUS
Edmond	1991			US 5027168	
Edmond	1994			US 5338944	HCAPLUS
Edmond	1995			US 5416342	HCAPLUS
Eichenauer, L	1996	153	1515	Phys Stat Sol	HCAPLUS
Flynn	1998			US 5815228	HCAPLUS
Garbuzov	1999			US 5874803	HCAPLUS
Gustafson	1998			US 5848837	
Helstern	1998			US 5743629	
Hide	1999			US 5966393	HCAPLUS
Isenberg	1974			US 3787684	
Kato	1997			US 5604763	HCAPLUS
Keith, B	1980		vii	Fluorescent Lamp Pho	
Lee	1998			US 5705047	HCAPLUS
Lowery	1999			US 5959316	HCAPLUS
Mach, R	1993		1229	Thin Film Electrolum	HCAPLUS
McIntosh	1998			US 5851905	HCAPLUS
Nakamura	1996			US 5578839	HCAPLUS
Nam	1997			US 5644584	HCAPLUS
Niina	1993			US 5187547	HCAPLUS
Perry	1990			US 4950950	HCAPLUS
Qinghua, Z	1999	1212	1207	Phys Stat Sol	
Robert, A	1987	17	1230	Encyclopedia of Phy	
Ropp, R	1968	1115	1940	J Electrochem Soc:So	HCAPLUS
Sato, Y	1996	135	1838	Jpn Appl Phys, Part	HCAPLUS
Shi	1997			US 5683823	HCAPLUS
Shigeo, S	1999		1217	Phosphor Handbook	
Shiju, N	1997		1216	The Blue Laser Diode	
Shimizu	1999			US 5998925	HCAPLUS
Singer	1998			US 5813752	
Srivastava	1993			US 5230831	HCAPLUS
Stevenson	1974			US 3819974	HCAPLUS
Tanaka	1998			US 5717289	HCAPLUS
Tang	1988			US 4769292	HCAPLUS
Tang	1994			US 5294870	HCAPLUS
Thornton	1979			US 4176294	
Tokailin	1992			US 5126214	HCAPLUS
Toma, S	1967	1114	1953	J Electrochem Soc:So	HCAPLUS
Vriens	1998			US 5813753	
Yamazaki	1996			US 5583879	HCAPLUS
Yan	1999			US 5865529	

L88 ANSWER 32 OF 32 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2000:384624 HCAPLUS Full-text

DN 133:24533

TI Light emitting device with phosphor composition

IN Silvestava, Alok Mani; Levinson, Lionel Monty; Beers, William Winder; Duggal, Anil Raj

PA General Electric Company, USA

SO PCT Int. Appl., 26 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000033390	A1	20000608	WO 1999-US28280	19991130 <--
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	US 6252254	B1	20010626	US 1998-203212	19981130 <--
	AU 2000020339	A	20000619	AU 2000-20339	19991130 <--
	EP 1051759	A1	20001115	EP 1999-964013	19991130 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2002531956	T	20020924	JP 2000-585942	19991130 <--
PRAI	US 1998-203212	A	19981130	<--	
	US 1998-19647	B2	19980206	<--	
	WO 1999-US28280	W	19991130	<--	
AB	Light sources (lamps, light-emitting devices) are described which comprise a (e.g., blue-emitting) light source covered with a covering that contains (e.g., blue-stimulable green-emitting and red-emitting) phosphors. The phosphor composition absorbs radiation having a first spectrum and emits radiation having a second spectrum and preferably comprises ≥ 1 of: YBO3:Ce3+, Tb3+; BaMgAl10O17:Eu2+, Mn2+; (Sr,Ca,Ba)(Al,Ga)2S4:Eu2+; and Y3Al5O12:Ce3+; and ≥ 1 of: Y2O2S:Eu3+, Bi3+; YVO4:Eu3+, Bi3+; SrS:Eu2+; SrY2S4:Eu2+; CaLa2S4:Ce3+; and (Ca,Sr)S:Eu2+. Methods of producing white light using the phosphor composition and the light source together are also described. Phosphor comps. comprising Y2O2S:Eu3+, Bi3+ or YVO4:Eu3+, Bi3+ are also claimed.				
IT	7439-96-5, Manganese, uses 7440-27-9, Terbium, uses 7440-45-1, Cerium, uses 7440-53-1, Europium, uses 7440-69-9, Bismuth, uses 16397-91-4, Manganese +2, uses 16910-54-6, Europium +2, uses 18923-26-7, Cerium +3, uses 22541-18-0, Europium +3, uses 22541-20-4, Terbium +3, uses 23713-46-4, Bismuth +3, uses RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses) (activator; light sources based on sources with coverings containing phosphors)				
RN	7439-96-5 HCAPLUS				
CN	Manganese (CA INDEX NAME)				
Mn					
RN	7440-27-9 HCAPLUS				
CN	Terbium (CA INDEX NAME)				
Tb					
RN	7440-45-1 HCAPLUS				

CN Cerium (CA INDEX NAME)

Ce

RN 7440-53-1 HCAPLUS

CN Europium (CA INDEX NAME)

Eu

RN 7440-69-9 HCAPLUS

CN Bismuth (CA INDEX NAME)

Bi

RN 16397-91-4 HCAPLUS

CN Manganese, ion (Mn2+) (CA INDEX NAME)

Mn 2+

RN 16910-54-6 HCAPLUS

CN Europium, ion (Eu2+) (CA INDEX NAME)

Eu 2+

RN 18923-26-7 HCAPLUS

CN Cerium, ion (Ce3+) (CA INDEX NAME)

Ce 3+

RN 22541-18-0 HCAPLUS

CN Europium, ion (Eu3+) (CA INDEX NAME)

Eu 3+

RN 22541-20-4 HCAPLUS

CN Terbium, ion (Tb3+) (CA INDEX NAME)

Tb³⁺

RN 23713-46-4 HCAPLUS
 CN Bismuth, ion (Bi³⁺) (CA INDEX NAME)

Bi³⁺

IT 12525-03-0, Calcium lanthanum sulfide (CaLa₂S₄)
 RL: DEV (Device component use); USES (Uses)
 (cerium-activated; light sources based on
 sources with coverings containing phosphors)
 RN 12525-03-0 HCAPLUS
 CN Calcium lanthanum sulfide (CaLa₂S₄) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
Ca	1	7440-70-2
La	2	7439-91-0

IT 12535-38-5, Strontium yttrium sulfide (SrY₂S₄) 82992-94-7
 , Calcium strontium sulfide ((Ca,Sr)S)
 RL: DEV (Device component use); USES (Uses)
 (europium-activated; light sources based on
 sources with coverings containing phosphors)
 RN 12535-38-5 HCAPLUS
 CN Yttrate(1-), dithioxo-, strontium (2:1) (9CI) (CA INDEX NAME)

S²⁻ = Y²⁻ S● 1/2 Sr²⁺

RN 82992-94-7 HCAPLUS
 CN Calcium strontium sulfide ((Ca,Sr)S) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0 - 1	7440-70-2
Sr	0 - 1	7440-24-6

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Datta	1967	114	1057	JOURNAL OF THE ELECT	HCAPLUS
Lowery Christopher Hayd	1999			US 5959316 A	HCAPLUS
Ronda, C	1998			US 5813753 A	

Siemens Ag	1985		DE 3406798 A	HCAPLUS
Siemens Ag	1998		DE 19638667 A	HCAPLUS
Toma, S	1967 114	953	JOURNAL OF THE ELECT	HCAPLUS

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(FILE 'HOME' ENTERED AT 12:22:08 ON 25 JUN 2008)
SET COST OFF

FILE 'REGISTRY' ENTERED AT 12:22:18 ON 25 JUN 2008

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E AL.GA.GD.IN.LA.LU.O.PR.SM.TB.Y/MF
L1      1 S E3
        E B.BA.CA.O.P.SR/MF
L2      19 S (BA AND SR AND CA AND B AND P AND O)/ELS
L3      2 S L2 NOT (MN OR AL)/ELS
L4      3 S 14265-44-2/CRN AND 7440-24-6/CRN AND 7440-70-2/CRN AND B/ELS
L5      2 S L4 NOT SI/ELS
L6      50 S 7440-39-3/CRN AND 7440-24-6/CRN AND 7440-70-2/CRN AND 7440-21
L7      4 S L6 AND 5/NC AND 5/ELC.SUB
L8      1 S 675819-84-8
L9      1 S 864429-56-1
L10     1 S 675819-79-1
L11     1 S 473908-57-5
L12     1 S 127575-65-9
L13     1 S 864429-52-7
L14     1 S 864429-53-8
L15     1 S 841303-43-3
L16     1 S 144920-98-9
L17     1 S 11084-89-2
L18     1 S 20775-37-5
L19     1 S 76125-60-5
L20     1 S 97358-83-3
L21     1 S 675819-82-6
L22     1 S 675819-83-7
L23     1 S 675819-85-9
L24     1 S 675819-86-0
L25     1 S 864429-55-0
L26     1 S 841303-50-2
L27     1 S 223757-06-0
L28     1 S 841303-51-3
L29     1 S 864429-56-1
L30     1 S 675819-79-1
L31     1 S 675819-90-6
L32     1 S 173525-28-5
L33     1 S 675819-91-7
L34     1 S 82992-94-7
L35     1 S 12535-38-5
L36     1 S 12525-03-0
L37     2 S 12159-91-0 OR 193361-69-2
L38     1 S 841303-46-6
L39     1 S 841303-47-7
L40     64 S EU/MF NOT MASS
L41     27 S MN/MF NOT MASS
L42     55 S SB/MF NOT MASS
L43     60 S CE/MF NOT MASS
L44     66 S TB/MF NOT MASS
L45     22 S K/MF NOT MASS
L46     91 S BI/MF NOT MASS
L47     49 S MO/MF NOT MASS

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FILE 'HCAPLUS' ENTERED AT 13:49:20 ON 25 JUN 2008

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L48      33 S L8
L49      1 S L1
L50      14 S L9
L51      3 S L10
L52      26 S L11
L53      1 S L13
L54      1 S L14
L55      605 S L15 OR L3 OR L5 OR L16-L39 OR L7
L56      472 S L40-L47 AND L48-L55
L57      36 S L48-L54 AND L55
L58      24 S L48-L54,L57 AND WHITE(L) LIGHT
L59      48 S L48-L54,L57,L58
L60      1 S US20050199897/PN OR (US2004-797784# OR WO2005-US05546)/AP,PRN
          E E SETLUR/AU
L61      86 S E4-E8
          E SRIVASTAVA/AU
L62      324 S E3,E4,E10
          E SRIVASTAVA ALOK/AU
L63      208 S E3,E6,E7
          E COMANZO/AU
L64      89 S E4-E7
          E HANCU/AU
L65      51 S E6-E8
          E VALYOU/AU
L66      1 S E4
          E GELCORE/CO
L67      85 S E3-E6/CO,PA,CS
L68      43 S L61-L67 AND L48-L60
L69      19 S L56 AND L12
L70      191 S L48-L56 AND PY<=2004 NOT P/DT
L71      242 S L48-L56 AND (PD<=20040310 OR PRD<=20040310 OR AD<=20040310) A
L72      433 S L70,L71
L73      26 S L72 AND L68
L74      3 S L12 AND L73
L75      26 S L73,L74
L76      26 S L75 AND L56
L77      304 S L72 AND L56
L78      11 S L77 AND L48-L54
L79      28 S L76,L78
L80      16 S L69 NOT L79
L81      4 S L80 AND L72
L82      32 S L79,L81
L83      32 S L82 AND (WHITE(L) LIGHT? OR BLEND? OR LED OR LIGHT?(L) (EMIT? O
L84      11 S L83 AND L48-L54
L85      30 S L83 AND L55
L86      32 S L84,L85 AND L40-L47
L87      7 S L86 AND L12
L88      32 S L86,L87

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FILE 'REGISTRY' ENTERED AT 14:07:35 ON 25 JUN 2008

FILE 'HCAPLUS' ENTERED AT 14:11:01 ON 25 JUN 2008

=> => d his 189-

(FILE 'REGISTRY' ENTERED AT 14:07:35 ON 25 JUN 2008)

FILE 'HCAPLUS' ENTERED AT 14:11:01 ON 25 JUN 2008

FILE 'REGISTRY' ENTERED AT 14:11:56 ON 25 JUN 2008

FILE 'HCAPLUS' ENTERED AT 14:12:06 ON 25 JUN 2008

SET COST ON

L89 27 S L50-L52
L90 0 S L89 AND PY<=2004 NOT P/DT
L91 9 S L89 AND (PD<=20040310 OR PRD<=20040310 OR AD<=20040310) AND P
L92 0 S L91 NOT L88
L93 33 S L48 OR L49
L94 0 S L93 AND PY<=2004 NOT P/DT
L95 6 S L93 AND (PD<=20040310 OR PRD<=20040310 OR AD<=20040310) AND P
L96 0 S L95 NOT L88
SET COST ON

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